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Transformation of Energy by Rubber

IRA WILLIAMS

IT HAS long been known that a strain produced suddenly in a strip of rubber is accompanied by a rise in temperature. Conversely, when the strain is quickly released, heat is absorbed, with a resulting decrease in temperature of the strip, or if the retraction is very slow, the temperature will remain constant and heat energy will be drawn from the surrounding atmosphere. In these changes rubber is only the medium for the transformation of energy. Besides being converted into heat, mechanical energy may be transformed into many other types, such as electrical energy and surface energy. Some of these, such as electrical energy, can be detected, while others, such as surface energy, are suspected of playing some part in the phenomena attending the strain of a piece of rubber. Heat energy, regardless of the mechanism of its origin within the rubber, is the predominating type of energy produced by stretching, and since it is largely reversible, a close relationship should exist between heat energy produced or absorbed and mechanical energy expended or consumed.

Heat and Mechanical Energy in Vulcanized Rubber

The approximate amount of heat liberated upon stretching a strip of rubber has been determined by measuring the temperature rise. The temperature rise, specific heat, and specific gravity permit the calculation of the amount of heat energy liberated. Mechanical means were supplied for stretching the strip to the desired elongation in about 1 second. A strip of rubber 10 cm. by 1 cm. by 3 mm. was stretched inside of a long glass tube loosely closed at each end with cotton. This precaution was necessary because of the effect of air currents on the temperature of the strip. A calibrated thermocouple, the junction of which was composed of No. 40 B. and S. gage copper and constantan wire reduced to half this diameter at the tip, was threaded into the side of the rubber strip so that the junction was approximately at the center. After the strip had assumed a uniform temperature, it was stretched and the temperature rise was determined from the deflection produced in a suspension galvanometer. The maximum deflection was obtained in about 5 seconds and the cooling curve was followed every 5 seconds for 1 minute. The temperature rise was then obtained by extending the cooling curve back to 1 second. The temperature rise obtained in this way was about 4 per cent higher than that indicated by the maximum deflection. Measurements of the heat generated at various elongations were all made on the same strip of rubber. The temperature rise after a complete rapid extension and retraction at a high elongation was also determined.

Stress-strain curves were made on the same compound. Dumb-bell test pieces which had been quickly stretched five times to 60 per cent of their breaking elongation were used. The clamps of the test machine separated at the rate of 20 inches (51 cm.) per minute.

The data shown in Table I were obtained with an accelerated pure-gum type of rubber with heat capacity of 0.465 calorie per cubic centimeter per degree and specific gravity of 0.998. The heat energy and mechanical energy are both expressed in Joules and in each case the figures represent the total change involved from zero elongation up to the elongation indicated.

TABLE I—HEAT ENERGY AND MECHANICAL ENERGY IN A STRIP OF VULCANIZED RUBBER

	From Temperature Rise		From Stress-Strain	
Elongation, Per Cent	Temperature Rise, ° C.	Heat Energy, Joules	Mechanical Energy for Extension, Joules	Mechanical Energy for Retraction, Joules
200	0.332	0.479	1.005	0.400
300	0.674	1.310	1.980	1.040
400	1.052	2.050	3.270	2.070
500	2.340	4.550	5.050	3.830
600	4.230	8.230	7.770	6.640

Residual heat after a complete cycle to 600 per cent elongation was 0.48 Joule.

These figures are interesting if viewed from the standpoint of efficiency of transformation of energy. The heat energy liberated upon stretching the rubber appears to be greater than the mechanical energy required to stretch the strip. This discrepancy will later be shown to be due to the fact that the rapid stretching of the strip used for determining the temperature rise caused more work to be done on this strip than on the strip used in obtaining the stress-strain curve. The only deduction to be made from these data is that at least a large part of the mechanical work is changed reversi-

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TABLE II—PER CENT ELONGATION OF LOADED STRIPS OF RUBBER AS TEMPERATURE IS VARIED

Temperature of Rubber ° C.	Elongation at Cure of: 0 Minutes*	30 Minutes			60 Minutes					90 Minutes	
	%	%	%	%	%	%	%	%	%	%	%
25	100	400	500	600	200	300	400	500	600	300	400
30	99	398	506	600	198	295	399	499	600	299	397
35	96	395	500	605	192	291	395	497	598	297	394
40	96	392	502	610	190	288	391	495	597	296	393
45	98	388	506	615	187	286	388	494	597	295	392†
50	101	385	512	630	185	284	385	494	597	295	...
60	115	384	527	645	183	281	381	494	597	294†	...
70	123	382	545	665	182	278	379	495	599	...	...
75	...	383	553	...	181	277	378	497	600	...	...
80	...	384	562	...	181	277	378	498	603†	...	...
90	...	386	574	...	180	276	379†	503†	...	...	...
100	...	387	582	...	179	278	...	...	...	...	...
110	...	388	588	...	180	281	...	...	...	...	...
120	...	392	600	...	184	289	...	...	...	...	...
130	...	405	...	...	191	302	...	...	...	...	...
140	...	...	...	...	207	326	...	...	...	...	...
Per cent set at end of test	...	38	90	47	18	23	10	15	15	5	5

*Obtained with a piece of unmilled smoked sheet rubber.
†Indicates strip broke at that temperature.

bly into heat energy. Viewed independently, the heat cycle shows an efficiency of 94.2 per cent as measured by the heat liberated at 600 per cent elongation and the heat remaining after a complete cycle, while the mechanical cycle as measured from stress-strain data shows an efficiency of only 85.6 per cent.

Mechanical Work as Temperature of Rubber Is Varied

Since the above comparison was rather unsatisfactory, an attempt was made to measure the mechanical work done when the temperature of a strained strip of rubber was changed. An agitated electrically heated bath filled with either water or ethylene glycol was used to control the temperature of the rubber. The test piece was in the form of a ring having a cross-section of about 2 sq. mm. The rubber was stretched between two hooks, one being fastened in the bottom of the bath and the other leading to one arm of a balance directly above. The load was applied to the other arm of the balance and the elongation was followed by means of a pointer attached to one of the balance arms. In conducting the test, the bath temperature was adjusted to 25° C., and the strip was strained to the desired initial elongation by loading one side of the balance. The temperature was then raised at the rate of 25° C. per minute and the corresponding temperature and elongation were recorded.

The data obtained by this method are of little value for determining quantitatively the transformation of heat into mechanical energy. In some cases the elongation increased continually as heat was applied and work was actually done on the rubber. In other cases a material decrease in length was noted, but the work done by the rubber represented only a small part of the heat absorbed by the rubber.

The data shown in Table II were obtained with a compound composed of 100 parts of rubber and 10 parts of sulphur, which was cured on a mandrel in open steam at 148° C.

The data presented in Table II confirm the observation made by van Rossem and van der Meijden[1] that vulcanized rubber exhibits plastic properties. They also show the tendency of rubber in the higher states of vulcanization to break at a low elongation when stretched at a high temperature, as has been shown by Somerville[2]. These data also show the ability of strained rubber to convert heat into mechanical energy. The test conducted on the 30-minute cure at 400 per cent elongation clearly shows the Joule effect. The shortening of the strip and the lifting of the load continue until the temperature has reached 70° C., when the plastic flow of the rubber has become great enough to more than balance the shortening of the strip due to the Joule effect. As the temperature is increased, the plastic flow increases, causing the strip to elongate, and part of this elongation remains as a permanent set of 38 per cent after the test is completed and the load removed from the rubber. When the test is started at an initial elongation of 500 per cent, the load is great enough to cause rapid plastic flow from the beginning and the Joule effect is entirely masked. When the cure is increased to 60 minutes, the Joule effect is shown at all initial elongations although only to a slight extent at the highest elongation where the rubber is under the greatest load. All the tests except the 90-minute cures show flow of the rubber at the high temperatures. The more vulcanized strips broke before a temperature high enough to cause this flow was reached. In general, the temperature at which the plastic flow masks the Joule effect for any given cure increases as the initial elongation and load decrease. The high elongations also show the inability of the rubber to withstand more than a moderately high temperature. The temperature at which stretched rubber will break will be found to decrease with increasing cure and increasing load. It will also be noticed that unvulcanized rubber shows the Joule effect, its action differing from that of a vulcanized strip only in degree.

Effect of Initial Permanent Set

The initial permanent set in the rubber is an important factor in determining the changes which take place when the strained rubber is heated. This is true because the elimination of as much of the initial plastic flow as possible permits the Joule effect to be more easily observed. Assuming that sufficient time is allowed for the test in every case, the greatest factor influencing permanent set is force applied. Elongation is the result of the application of force and is not a direct cause of permanent set. Plastic flow requires a force greater than some definite minimum. The greater this excess the more rapid will be the plastic flow. For this reason the Joule effect is more easily masked when the greatest load and highest elongation are used.

During the initial period of stretching rubber behaves like an elastic network surrounding a dispersed plastic phase which changes from some more or less regular shape into slender rods. Once the rods are formed, tendency for further flow is very much decreased. If as much deformation of the plastic portion as possible is obtained before heat is applied, shortening of the strip will be very much more pronounced. When the temperature of the rubber is raised high enough, the strip will again begin to elongate. This flow definitely affects the elastic portion of the rubber, but it cannot be true plastic flow since it seems to be limited in amount. A permanent set of 100 per cent is often found, but very rarely will 200 per cent be reached.

[1] Van Rossem and van der Meijden, *Rubber Chem. Tech.*, 1, 393 (1928).
[2] Somerville, *Ibid.*, 2, 1 (1929).

TABLE III—EFFECT OF INITIAL PERMANENT SET ON CHANGE IN ELONGATION OF A STRETCHED RUBBER BAND WHEN HEATED

Elongation on Curing at 140° C.

Temperature ° C.	15 Minutes Original Permanent Set 0%	15 Minutes Original Permanent Set 8%	15 Minutes Original Permanent Set 0%	15 Minutes Original Permanent Set 10%	20 Minutes 0%	20 Minutes 8%
	%	%	%	%	%	%
25	200	200	500	500	300	300
30	197	193	500	499	300	297
35	195	188	500	498	298	294
40	192	187	500	496	295	289
50	190	182	503	495	292	282
60	188	176	513	491	290	275
70	188	172	528	483	288	268
80	190	168	540	480	288	262
90	194	164	566	486	289	258
100	201	162	588	506	292	261
105	205	163	...	...	296	265
110	210	165	...	...	304	272
115	215	169	...	...	315	279
120	224	176	...	...	332	291

The data in Table III were obtained with a stock composed of 100 parts of smoked sheet, 5 parts of zinc oxide, 3 parts of sulphur, and 1 part of butyraldehyde aniline accelerator and illustrates the effect of the initial plastic flow on the action of the strained rubber when it is heated.

The introduction of the idea of plastic flow requires the consideration of the element of time. A strip of rubber may be stretched quickly with little resulting permanent set, but by holding in a strained condition for a period of time considerable permanent elongation will result. Plastic flow of any portion distributed through the elastic network will be caused by slow stretching and will be reversed when the strain in the rubber is released due to energy which is stored in the rubber. The speed of the flow in the reverse direction becomes slower as the force exerted by the rubber becomes less and, since plastic flow requires a force beyond a definite minimum, the flow will cease when the force in the rubber has reached this minimum. The remaining deformation in the strip will remain as permanent set. This set can be somewhat further reduced by warming the strip which increases the plasticity of the plastic portion and the force resulting from the remaining strain in the vulcanized network.

Stress-Strain Curves

Since all the tests which we apply to rubber involve a greater or less extent of time, it follows that all the results are a composite of elastic strain and plastic flow. This is especially true of such tests as the determination of stress-strain curves, which occupy considerable time. As shown recently by the Physical Testing Committee of the Division of Rubber Chemistry of the American Chemical Society[3], stress-strain curves obtained at a high temperature show a lower load-carrying capacity than those obtained at a lower temperature. This is especially true of compounds to which certain softeners and plastic material have been added. Since a strained strip of rubber exerts a greater force when heated, a softer stress-strain curve can be obtained only when the plastic flow overcomes the Joule effect.

It is possible to overcome the plastic flow to a large extent by conducting the test in as short a time as possible and when stress-strain curves are obtained in 2 or 3 seconds, a greater load-carrying capacity is shown at a higher temperature. This is especially true if part of the initial plastic flow is eliminated by stretching the rubber a few times before conducting the test.

[3]Partenheimer, *Ind. Eng. Chem.*, 20, 1245 (1928).

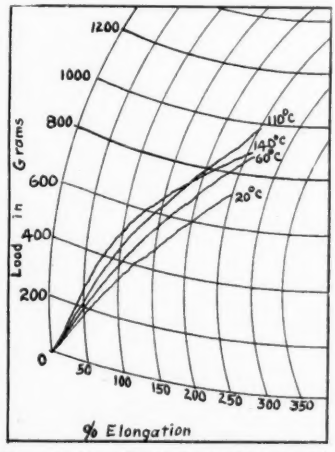


Figure 2—Stress-Strain Chart Obtained with Apparatus Shown in Figure 1

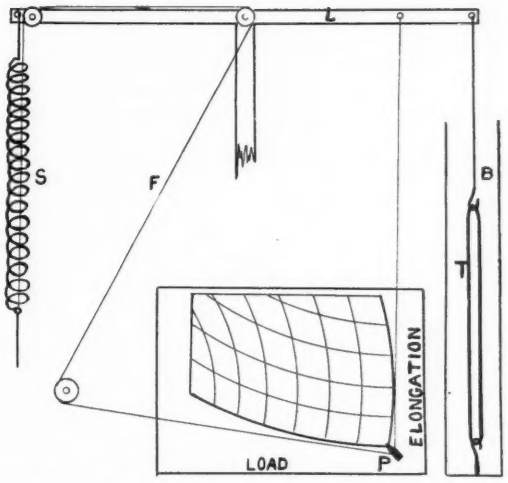


FIGURE 1—APPARATUS FOR PLOTTING STRESS-STRAIN CURVES

A simple apparatus for plotting stress-strain curves is shown diagrammatically in Figure 1. The test strip, *T*, which is in the form of a ring, is fastened to one end of the lever arm, *L*, and to the bottom of the bath, *B*. The bath is filled with water or ethylene glycol and can be held at any temperature. Force is applied to the strip by means of the spring, *S*, which is attached to the other end of the lever arm. Elongation of the strip is recorded by the pen, *P*, which is attached to the test-piece side of the lever arm. The force exerted is recorded through the thread, *F*, which passes from the pen, over pulleys at the fulcrum, and at the spring end of the lever, and is attached to the bottom of the spring.

Figure 2 is a chart obtained with an apparatus of the type just described when using an accelerated pure-gum type of compound which was vulcanized to a point considerably below the maximum attainable physical strength. The ring test piece was stretched several times previous to conducting the test in order to remove at least part of the permanent set, which, if permitted to remain, would tend to make the second stress-strain curve fall too low on the load axis because the initial length of the test ring would be increased. The curves were carried only to a relatively low elongation in order that the load imposed would not be great enough to cause plastic flow, which would appear as set and interfere with the next test. After the test ring had been slowly stretched several times to 600 per cent elongation, its circumference was measured. This was necessary in order to permit construction of the proper elongation spacing for the chart on which the curves were recorded. The test ring was then placed in the machine and the curves were obtained as rapidly as the bath could be raised from one temperature to another without removing the test ring between tests.

The curves obtained are what could have been predicted from the experiments previously described. In each case an increase in temperature has resulted in a greater load-carrying capacity for the rubber. In addition to greater load-carrying capacity, the curve obtained at 140° C. also shows plastic flow. In this case the load has increased and the temperature has been raised until a yield point has been reached. The same phenomenon can take place at a lower temperature if the elongation is increased.

These curves have been transposed to rectangular coordinates in Figure 3 and the stress-strain curve calculated from data obtained at 20° C. with a dumb-bell test strip in the usual manner is added for comparison. It will be seen that the curves obtained at a rapid rate are practically straight lines, which indicates that the elastic portion of rubber obeys Hooke's law. This is true as long as no flow takes place. In the curve obtained at 140° C. the stress-strain relationship of the elastic rubber is partly masked by flow at the higher elongations. All ordinary stress-strain curves show the effect of plastic flow at low elongations, but when higher elongations are reached, the curves straighten out and the change in stress becomes nearly proportional to change in strain. The slope of this portion of the curve has been used by De Vries as an index to the quality of the rubber. The displacement of this part of the curve to the right or left would indicate roughly the amount of plastic material. The curves obtained at the rapid rate at both 20° and 60° C. are entirely reversible, while the retraction curve obtained by the ordinary slow method shows an initial rapid decrease in the load due to the fact that the energy stored in the strip is being consumed to cause the rapid reversal of flow of the plastic portion.

It is interesting to note in any series of stress-strain curves obtained with different periods of vulcanization of the same stock that at high elongation the curves are parallel. After most of the plastic flow is eliminated, elastic strain becomes the dominant factor and the strain produced by unit stress is constant over a wide range of cures. This condition exists until continued vulcanization appears to destroy part of the elastic properties when the strain produced by unit stress becomes greater. Plastic deformation shown by the first part of the curve decreases as the vulcanization period is lengthened until an overcured condition is reached. These facts indicate that the greatest effect of vulcanization is a change in the plastic properties of the rubber and that the elastic properties change very little. Whether the plastic and elastic properties are contained in the same or in different molecules need not be considered. In any case the elastic properties are shown by rubber which has had only a very short period of vulcanization, and by suppressing the plastic properties it should be possible to demonstrate the elastic properties of unvulcanized rubber. The requirement of such a test is the elimination as far as possible of the time factor, since time is required for plastic flow.

Rebound

Rebound is a very simple test which can be applied to rubber and which eliminates the time factor to a certain extent. When a rigid weight is dropped on a piece of rubber, all the kinetic energy of the weight is transferred to the rubber. Since the rubber is elastic, potential energy is stored in the rubber and is returned to the weight, but part of the original energy is lost during the transfer. Lubricating the contact between weight and rubber does not increase the rebound, which shows that the energy loss is in the rubber and not between the surfaces of weight and rubber. This loss of energy is due to internal frictional resistance caused by motion of the rubber, and since the time factor is not entirely eliminated, part of the loss is due to plastic flow. Rebound should then be increased by any factors which would tend to reduce the amount of motion and to decrease the resistance to plastic flow. These conditions are filled by an increase in temperature, which increases plasticity and at the same time gives the rubber the ability to support a greater load at a given elongation, which means that the motion is reduced. The data given in Table IV show the increase in rebound with temperature for both raw and cured samples of the same pure-gum type rubber compound.

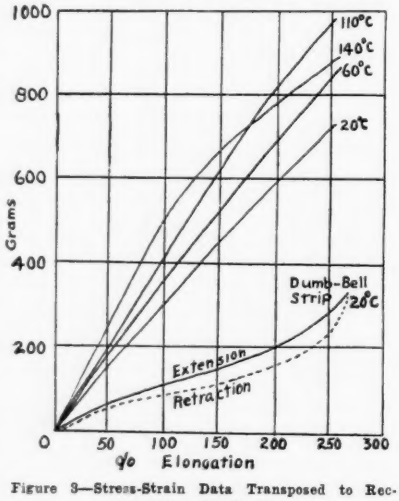


Figure 3—Stress-Strain Data Transposed to Rectangular Coordinates

TABLE IV—EFFECT OF TEMPERATURE AND VULCANIZATION ON REBOUND

Temperature ° C.	Rebound	
	Uncured Per Cent	Cured Per Cent
15	59	63
23	63	67
50	72	76
70	78	81
90	79	85

These figures show the elastic property of unvulcanized rubber and also indicate that the temperature of unvulcanized rubber can be increased to a point where rebound no longer continues to increase. This point may correspond to the high-temperature flow observed in vulcanized rubber. Any study of the elastic properties of crude rubber by the rebound method should then be made at room temperature. It is also apparent that the change brought about by vulcanization has produced only a slight increase in rebound. This could be caused by either a decrease in plastic properties or an increase in elastic properties or both.

The suggestion is contained in both the series of stress-strain curves and in rebound figures that vulcanization consists essentially in suppressing the plastic properties of the rubber and not in creating elastic properties. If this is true, the rebound value of raw rubber should serve as a rough index to its quality. Since rebound is still a composite of elastic and plastic properties, and does not distinguish between quality and quantity of either elastic or plastic material, the test cannot be expected to be extremely accurate, but should roughly classify crude rubber into different grades.

In the determination of rebound it is essential that uniform conditions be followed. To support the uncured rubber, metal rings 1 cm. thick and 3 cm. in diameter were used. The rubber was pressed into these rings and permitted to adhere to a heavy metal base plate. The top of the rubber was covered lightly with soapstone and a smooth weight was placed on the slightly warmed rubber until a smooth surface was obtained. The steel weight used in the rebound test was 7 cm. long and 2 mm. in diameter. The ends of the weight were rounded. This was dropped through a glass guide tube from a height of 50 cm. It is essential that the guide tube be exactly perpendicular and not touch the surface of the rubber.

A number of different samples of rubber have been examined for rebound before vulcanization and physical properties after vulcanization. Unless stated otherwise, all samples were milled on a very hot mill in order to preserve the original state as far as possible. The compound used was 100 parts of rubber, 5 parts of zinc oxide, 3 parts of sulphur, and 1 part of di-*o*-tolylguanidine. Vulcanization was carried out at 140° C. Maximum tensile and stress at 600 per cent elongation were taken from curves plotted to show changes of these properties with time of cure. Results are shown in Table V.

These data are plotted in Figure 4. While the points do not fall on a smooth curve, the tendency for decreased tensile and load-carrying

TABLE V—REBOUND OF UNVULCANIZED RUBBER AND PHYSICAL PROPERTIES AFTER VULCANIZATION

Type of Rubber	Rebound 24° C. Per Cent	Max. Load at 600% Elongation Kg./Sq. Cm.	Max. Tensile Kg./Sq. Cm.
Smoked sheets	64	194	296
Smoked sheets, gassy	63	172	268
Smoked sheets, moldy	62	175	260
Smoked sheets, clean, ribbed	66	176	311
Smoked sheets, clean	66	188	302
Smoked sheets, clean	65	175	290
Smoked sheets, clean	65	163	290
Smoked sheets, clean	65	170	295
Pale crepe	66	161	294
Pale crepe	65	173	288
Para ham, washed	67	203	336
No. 1 amber blanket	61	140	252
No. 1 amber blanket	65	170	292
No. 1 amber blanket	64	173	279
No. 1 amber blanket	65	177	303
No. 2 amber blanket	60	140	246
No. 2 amber blanket	63	172	238
No. 3 amber blanket	59	140	276
Roll brown	54	111	131
Roll brown	59	140	224
Smoked sheets milled cold 40 min.	48	115	130
Sheets 85, mineral rubber 10, pine tar 5	61	161	238

capacity to accompany decreased rebound is shown. For rebound above 60 per cent the increase in tensile is very roughly 7 kg. per square centimeter for each per cent increase in rebound. The curves cannot be straight lines, since they do not incline toward the origin through which they must pass.

It is true in general that in any given series of polymers the smaller molecules are more reactive chemically. Since vulcanization involves a chemical combination of sulphur, the rubber having the largest proportion of the smallest molecules should combine with sulphur at the greatest rate. While milling will greatly increase the plasticity of rubber, this increase should be at the expense of the elastic network and of the largest aggregates more than of the aggregates of medium size. In spite of the fact that the number of the smallest aggregates may not be greatly increased by milling, the rate of combination of sulphur seems to be slightly increased. A sample of rubber milled with 10 per cent of its weight of sulphur for 40 minutes on cold rolls had combined 1.86 per cent of sulphur after 2½ hours' cure at 140° C. A similar mixture produced in a short time on hot rolls combined only 1.72 per cent of sulphur. This indicates that an increase of 8 per cent in the rate of combination has been caused by milling, although the physical state of the excessively milled rubber would indicate that no cure had taken place. Axelrod[4] showed a similar increase after the rubber was plasticized by heat.

[4] Axelrod, *Gummi-Ztg.*, 24, 352 (1909).

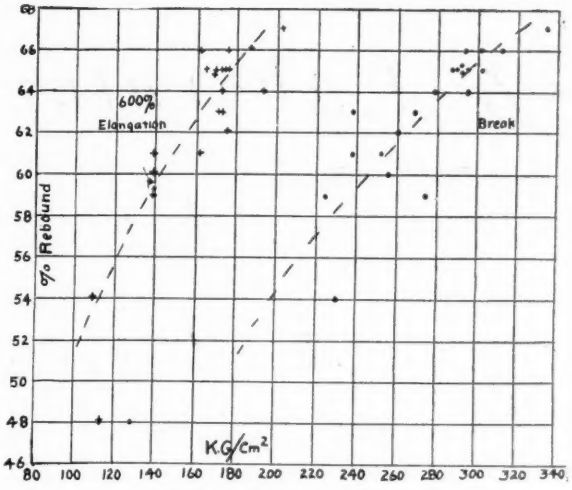


FIGURE 4—REBOUND DATA

Conclusion

The data which have been presented indicate that elasticity is a property of rubber which persists through vulcanization and is not created to any great extent. The physical state of the rubber after any period of cure depends on the balance between suppression of plastic properties either directly or indirectly through the influence of combination of sulphur, and the creation of plastic properties through the influence of heat. It is probable that sulphur also combines at a slower rate with the elastic portion of the rubber and finally results in a product of almost no mechanical strength.

The transformation of energy by rubber depends upon the condition of the rubber as well as on the condition of the test. Heat liberated by elastic strain can be transformed almost quantitatively into mechanical work. Heat due to internal-frictional resistance which will be caused by both plastic and elastic flow is not reversible. Any reduction in time required for the transfer of energy reduces the amount lost through plastic flow. An increase in temperature increases the resistance of the elastic portion to strain, but also reduces the resistance to flow of the plastic portion. Sufficient increase in temperature causes a large energy loss due to a considerable but limited permanent flow of the rubber. This cannot be plastic flow of the elastic portion, since it is limited in extent, but can better be explained by some mechanical change such as a breaking of the anchorage between portions of the plastic material and elastic network.

Fall Meeting, Rubber Division, A. C. S.

THE fall meeting of the Division of Rubber Chemistry of the American Chemical Society will take place at Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., on Thursday, Friday, and Saturday, September 26, 27, and 28, under the auspices of the New York Group.

The committees appointed to take charge of the meeting are as follows: Program, S. M. Cadwell; Hotel and Transportation, D. F. Cranor; Ladies' Committee, Mrs. Cadwell; Boating, W. H. Cope; Musical Committee; K. J. Soule; Registration, E. H. Grafton; Special Treasurer, W. H. Cope; Special Liaison Officer, W. L. Sturtevant.

C. R. Johnson will report on the "Role of Oxygen in Carbon Black." A. A. Somerville will present a paper on "The Aging of Rubber Under Tension." W. A. Gibbons will tell of a laboratory flexing test for tire carcass and belts. R. H. Gerke has a paper on the "Thermodynamics of Rubber." Other interesting papers will be announced in due course.

The division will be in one hotel and have a private dining room so that there will be plenty of opportunities for informal discussion. When the work is over, all will go fishing together. Of course there are arrangements for golf and tennis, and there is always the boardwalk at Atlantic City. The usual banquet will probably be held on Friday night. A dance, a tea, and wheel-chair trips for the ladies are also planned.

A Laboratory for Testing and Compounding Rubber

The pioneer rubber research and service laboratory established by a chemical manufacturer to study accelerators of vulcanization and related rubber problems.

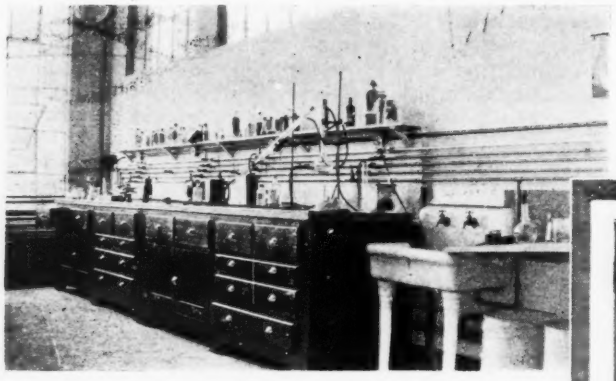


Fig. 1. Chemical Research Laboratory

THE laboratory described below was started by The Roessler & Hasslacher Chemical Co. in the year 1917 for the purpose of extending its sale of accelerators and other compounding materials through the furnishing of reliable and helpful data concerning their properties in vulcanization. The present layout is the result developed from twelve years of experience in rubber testing, and it is hoped that the information presented here will be of help to others who are interested in this field. Some illustrations and a drawing of the floor plan are given as an aid to the description.

The total area is approximately 1,800 square feet, divided into four rooms, comprising the laboratory departments. Large glass partitions are placed in the walls between the rooms. This facilitates lighting and permits a general view of all operations in progress from most points in the laboratory. The manager's office is placed to overlook the compounding and testing room, the storage space, and the vulcanizing or curing room.

A special laboratory shown in Figure 1 devoted solely to chemical research on the problems involving the preparation and development of rubber accelerators, is located in another portion of the building.

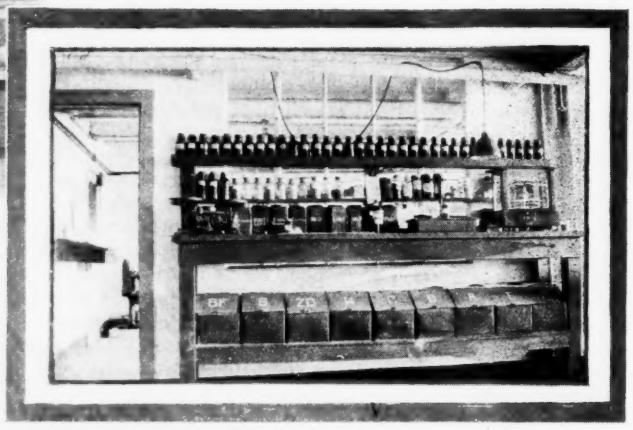


Fig. 2. Compounding Bench

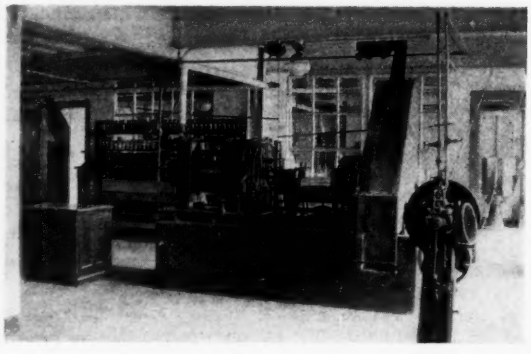


Fig. 3. Mill Calender and Tuber

Compounding

Cleanliness and order contribute considerably to efficiency and accuracy in work, and special effort has been made in this laboratory to attain these ends. The compounding bench, shown in Figure 2 has an aluminum working surface. A complete supply of commonly used softeners, antioxidants, and accelerators is placed on separate shelves to the rear of the bench. A row of portable, galvanized boxes 10 by 10 by 12 inches, having one corner cut away and replaced with a hinged cover for more convenient access to the contents, is arranged in a row underneath the bench. Each box, plainly labeled, is provided with a scoop and contains a supply of one of the ingredients commonly used in compounding.

Three balances of different capacities, 5 to 1,000 grams, 1 to 5 grams, and under 1 gram, with appropriate sensitivities, are conveniently placed on top of the compounding bench. All ingredients ordinarily needed, as well as a

balance suitable for weighing the required amount of each, are within easy reach of the compounder.

A storage room or pantry, lined with shelves, is nearby. Stocks of ingredients in original packages are stored here. The office and laboratory rooms are thus unencumbered by a litter of samples and packages of supplies.

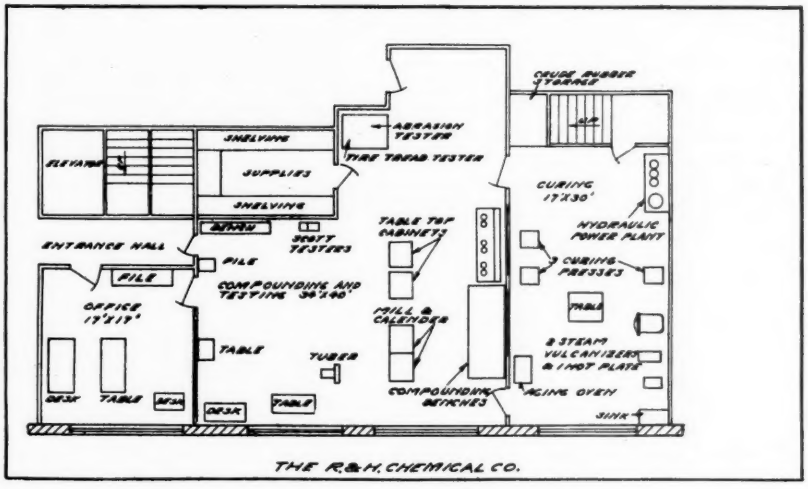


Fig. 4. Plan of the Laboratory

The motor-driven mill and calender is of the usual laboratory type and size. This is shown in Figure 3.

Next to the mixing mill is a wooden cabinet with five shallow drawers, 24 by 32 by 3½ inches, for storing mixed samples. To increase the convenience and utility of this cabinet, the top of the cabinet and the bottom of each drawer are covered with polished sheet aluminum 3/32-inch thick. Freshly milled and calendered stock can be placed in these drawers and kept free from contamination until wanted for curing. These drawers provide the worker with a bench area six times larger than the floor space occupied.

Near the mixing equipment is a small Royle tuber with head for wire insulation and dies for tubing. This is also shown in the foreground of Figure 3. A complete floor plan of the laboratory may be seen in Figure 4.

Curing

The curing or vulcanizing room contains two steam vulcanizers and two hydraulic platen presses, one of which is shown in Figure 5. These presses, 20 by 20 inches, are operated by a compact hydraulic triplex pump working at a pressure of 1,800 pounds per square inch. The three cylinders insure continuity of pressure. A 20-inch hand-knock press is included as an auxiliary convenience for special work. The temperature of the curing presses is automatically regulated to ± 0.5° by a well-known steam - operated device adjustable to any temperature.

The two steam vulcanizers are shown in the foreground of Figure 5. The larger of these has an inside diameter of 18 inches and an inside length of 28 inches. The smaller has an inside diameter of 4 inches and an inside length of 30 inches, and is steam jacketed for making dry-heat tests with or without pressure. Both operate under temperature automatically controlled to ± 0.5°.

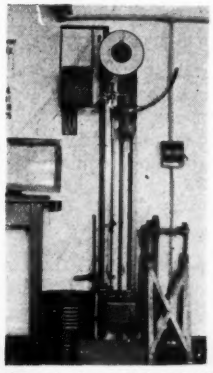


Fig. 8. Scott Tester

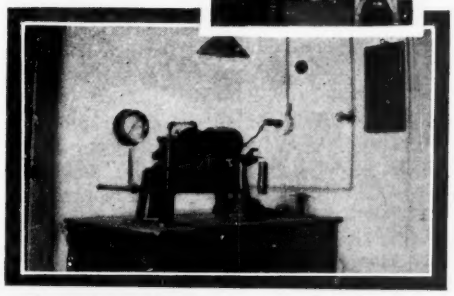


Fig. 9. Grasseli Abrader

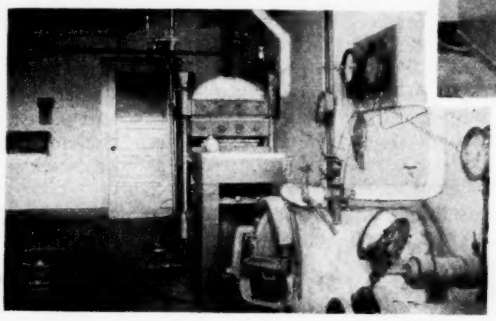


Fig. 5. Curing Presses and Vulcanizer

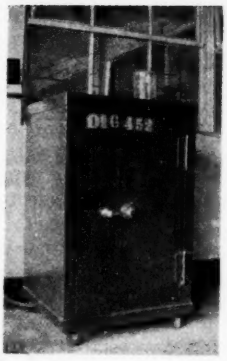


Fig. 6. Aging Oven

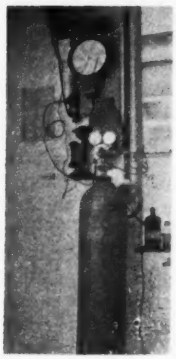


Fig. 7. Oxygen Pressure Control

Aging

Accelerated aging tests by the Geer-Evans method are conducted in a chamber adapted from a light fireproof safe, 2 by 2 by 3 feet, shown in Figure 6. The necessary air current is secured by natural draft through 2-inch holes burned near the center of the bottom and the top. A metal cylinder about 4 inches high is fitted into the air exit where it serves as a chimney. The rate of air flow may be controlled by dampering this chimney to the desired degree. The air, entering at the bottom, is heated by electrical space heating units placed just over the lower hole. This air is baffled by heavy asbestos board placed over the heating units. The samples are suspended from hooks in the upper portion of the safe, where the temperature is uniform. The temperature is controlled to within ± 0.5° by a bi-metallic thermo-regulator which operates a sensitive relay connected to the heating units. The apparatus affords room for an adequate number of samples; its large door provides easy accessibility; the walls are well insulated; and the rugged structure imparts excellent wearing qualities to the aging oven.

Accelerated aging in an atmosphere of heated oxygen is carried out in two steel bombs located on the floor above. These bombs are submerged in a metal container filled with water, heated by steam.

Evaporation losses are replaced by a small stream of cold water which overflows through a suitable outlet. The tank is surrounded by sand bags and heavy steel caging for protection against the possibility of explosions. The temperature of the bath is automatically held at 70° C. by a well-known steam-controlling device placed near the bath. A recording thermometer located in the laboratory below registers the temperature of the bath. Particular attention is invited to the fact that regulating and recording devices connected with the bomb operation are located on the floor below. The arrangement of these devices is shown in Figure 7. This feature of distant control saves much time.

Oxygen Supply

The oxygen supply in an ordinary tank equipped with a pressure-reducing regulator and gage is piped from the laboratory to the bombs. A second pressure-indicating gage is located in the oxygen line near the bombs. A vent valve is placed in the oxygen pipe line in the laboratory. When the contents of the bomb are to be removed or inspected, the laboratory rules require that the oxygen in the bombs must be vented through this valve before the operator leaves the laboratory.

Two telephones, operated by dry cells, are placed, one in the laboratory, and one close to the bombs on the floor above. The hiss of escaping oxygen in case of a leak, or the failure of the steam to bubble through the water bath may thus be readily detected by a listener in the laboratory without making a trip to the floor above.

Physical Testing

It has been found convenient to place the benches and apparatus for physical tests on cured samples in side locations near the walls. The two Scott testers, one of which is shown in Figure 8, are equipped with automatic charting devices for recording stress-strain curves.[1] Abrasion tests are performed on the Grasselli abrader,[2] shown in Figure 9.

Anti-skid tires have a well-known tendency to develop cracks at the base of the tread. In this laboratory a special mechanism has been devised to study this problem. Severe road conditions can be simulated to a considerable extent. The effect of strain, stretch, and friction on the rubber can be modified at will, while the wear and tear can be studied at precisely timed intervals. This machine is arranged to test a number of stocks at the same time. A detailed description of this apparatus will be given in a future paper.

Records

Realizing that an adequate system for filing and recording the work done is of profound importance, particular precautions have been taken here to make the record system complete and convenient. Nearly 14,000 test series have been made in the last twelve years. Practically all these specimens are now on hand, numbered, boxed, and stored for ready reference. The numbers are molded on the rubber by means of small, thin, aluminum plates on which numerals are stamped. The plates are readily peeled off after the rubber has set. The storage boxes are of uniform size, which permits compact placement, and are appropriately marked. These are stored in numerical order on shelving located adjacent to the ceiling of the mixing room. In this overhead location they are out of the way, do not occupy floor space, and are readily accessible. The original notebook record of these tests is kept in the customary manner.

This article and the accompanying illustrations are a contribution from the laboratory of The Roessler & Hasslacher Chemical Co., Perth Amboy, N. J.

[1] India Rubber World, Apr. 1, 1925, p. 411.
[2] Ira Williams, U. S. Patent No. 1,711,866.

A. S. T. M. Thirty-second Annual Meeting

THE thirty-second annual meeting of the American Society for Testing Materials was held at Atlantic City, N. J., June 24-28, 1929. The following summary of the proceedings relates to matters of interest to rubber manufacturers.

The report of Committee D-13 on Textile Materials was presented by the chairman, W. H. Whitcomb. The proposed Tentative Specifications for Asbestos Tape for Electrical Purposes and Specifications for Chafer Tire Fabrics were accepted for publication as tentative. The proposed revision of the Tentative Methods for Identification of Textile Fibers and Their Quantitative Determination in Mixed Goods (D 276-27T) recommended by the committee was accepted, the methods being continued as tentative. The Tentative Specifications for Tolerances and Test Methods for Certain Light and Medium Cotton Fabrics (D 274-27 T); Specifications and Tolerances for 23/5/3 Carded American Tire Cord (D 298-28T) and Specifications for Tolerances and Test Methods for Asbestos Yarns (D 299 28T) were approved for reference to letter ballots of the Society for adoption as standard.

The chairman announced that as a result of the resignation of D. C. Scott as second vice-chairman, and a change of employment of the chairman, an election of committee officers was held which resulted in the reelection of W. H. Whitcomb as chairman, and the election of W. E. Emley as second vice-chairman. On motion, the report of the committee was adopted.

The report of Committee D-11 on Rubber Products was presented by the chairman, L. C. Conradi. The committee recommended for adoption as tentative a new proposed method of test for the hardness of soft rubber (in slab form) which it was not found possible to include in the report as preprinted. This method as proposed was accepted for publication as a tentative standard. The proposed revisions of the Tentative Methods of Chemical Analysis of Rubber Products (D 297-28T) recommended by the committee were accepted, the methods being continued as tentative. On motion, the report of the committee was adopted.

A paper entitled "The Use of a Group of Performance Tests for Evaluating Rubber Compounds That Must Withstand Repeated Compression," under the joint authorship of Harlan A. Depew and E. G. Snyder, was presented by Mr. Depew.

Rust-Proof Rubber Insulated Wires and Cables

Rust-proof wires and cables made by the Helsby process are specially suitable for use where rubber insulated conductors are exposed to the action of iron-rust or any other oxidizing agent or to the action of acid. These wires are insulated with vulcanized rubber, the outer surface of which is coated with a waterproof flexible material that is practically unaffected by iron-rust, oxidizing agents, or dilute acids. The wire or cable is then served with the usual waterproof tape and the whole vulcanized together.

As the result of careful experiments, it was found that while the ordinary rubber cables were seriously deteriorated, the insulation resistance and the physical condition of the rubber in the special rust-proof cables were as good as when they were first put under test.

Rubber insulation protected in this way is also suitable for use in chemical works, dyehouses, and other damp, steamy situations.—British Insulated Cables, Ltd., Prescot, Lancashire, England.

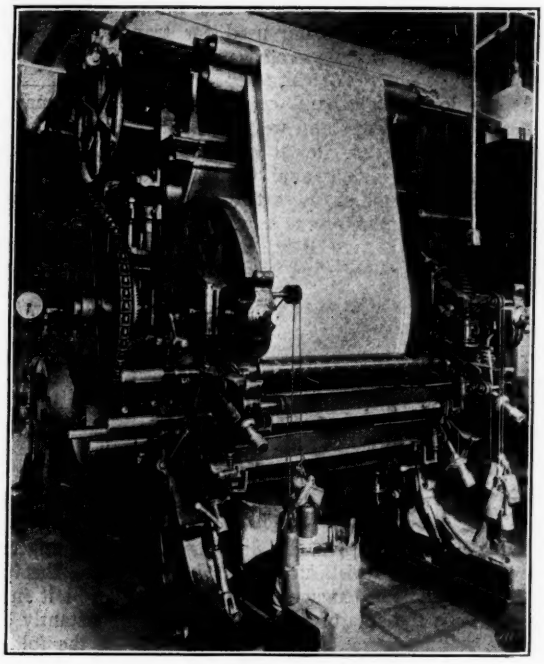


Fig. 1.—Eight-Color Machine

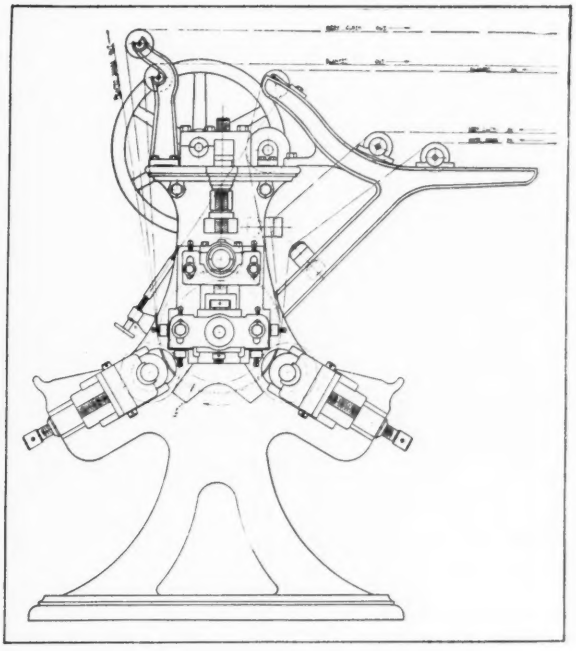


Fig. 2.—Two-Color Machine

Color Printing Machines

COLOR printing machines as used in printing textile fabrics are adapted without changes for printing rubberized goods for raincoats, covers for porch furniture, and other weatherproof uses. The machine pictured in Figure 1 is an 8-color machine and that shown in Figure 2 is for 2-color work only. The description given below applies to the operation of either machine.

Referring to Figure 1, the engraved copper printing roller is located on a steel mandrel, which passes through the machine, and is carried in bearings that slide up and down in the side frames. This roller is held in contact by pressure screws, which may be used for putting considerable pressure between the copper roller and the material being printed. The color is supplied to this engraved roller from a color pan which has in it the furnisher roller. The engraved roller and the furnisher roller are meshed together through a pair of gears; in this way the turning of the printing roller causes the furnisher roller to revolve and transfer a film of color from one to the other.

It is only the engraved parts of the print roller that should be transferred to the material, and in order to remove the surplus color, a very accurately fitted steel or bronze doctor blade is placed in contact with the copper roller. This is not shown in the photograph, but the bearings which carry it may be seen on the right-hand side immediately opposite the pair of gears which connect the rollers. The fitting of this doctor to the copper roller is of vital importance as the slightest unevenness may cause the color to escape from under the blade and find its way to the goods. In order that this doctor may not damage the delicate surface of the printing roller it is made to oscillate, and this is done by the vibrating mechanism seen at the left-hand side of the picture, and operated through the various bevel gears shown on that side of the machine.

There is still another doctor very frequently used and sometimes termed the lint doctor. This is not shown but is placed also in contact with the copper roller immediately after the roller has left the goods. Its purpose is to remove from the engraving as much as possible of the lint and fluff which is often picked up from the goods and if not removed, would naturally find its way into the color pan and so change the shade of the color.

A word of explanation is necessary on the bearings which carry the steel mandrels which have on them, in turn, the print rollers. In order that all of the colors may be perfectly matched, this bearing is specially designed so that each individual roller may be adjusted perfectly with all of the others. All of these rollers are placed around and in contact with a central cylinder and this cylinder is driven by contact with the print rollers. This should be very clearly understood as the gears which are shown at the right-hand side of the picture do not connect directly with the cylinder itself. This arrangement is made necessary, no matter what system of gearing may be utilized, as there is always a tendency for the rollers to slip on the goods should the cylinder be geared directly.

The cylinder is wrapped with lapping which serves two purposes. First, it gives a printing surface which is not quite so solid as a cast-iron surface would be and at the same time it prevents the rubber blanket from slipping and so causing the pattern to get out of mesh. On top of this lapping is the endless blanket. This may be of a very fine canvas material, but in most cases it is rubberized. In order to protect the rubberized blanket as much as possible from smudges of color which might soak through to the wrong side of the material, a grey cloth is run between the

goods being printed and the rubber blanket. This grey cloth is not endless, but is run through the machine along with the material so that any stain which finds its way onto the grey cannot possibly come through the machine a second time.

In describing the drive briefly, attention is called to the chain casing, which may be seen on the right-hand edge of Figure 1. This encases a silent chain and sprockets, transmitting motion from the electric motor to the driving shaft of the machine. On the inboard end of the driving shaft is a pinion meshing with an intermediate gear, which revolves freely on a suitable stud carried on the side frame of the machine. Power is then transmitted from the intermediate gear to the printing rollers through the medium of the fitting gears that are placed on the ends of the mandrels carrying the rollers. There is one fitting gear on each mandrel, and besides being used for transmitting power, it has a special worm-operated mechanism for registering the pattern.

At the lower right-hand corner of the picture may be seen a system of levers and weights. These are used on the two colors which are lowest on the machine. The only reason for using this special form of pressure rig is that it is not convenient on these two colors to apply the pressure by the ordinary screws used on the other ones.

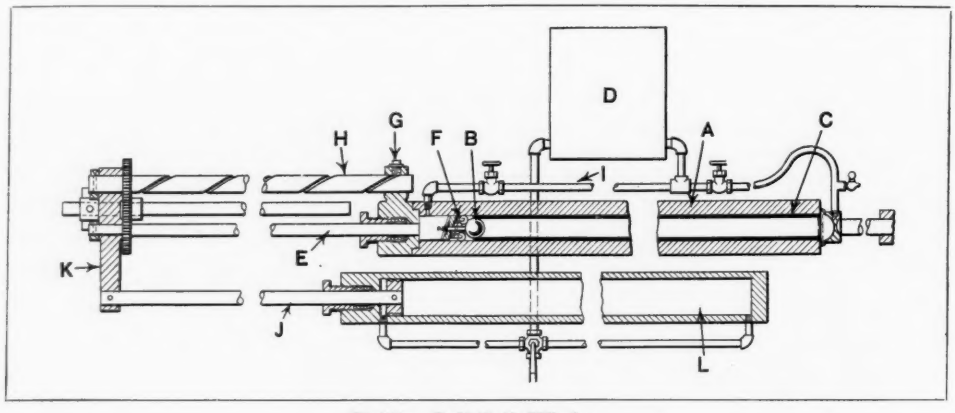
We are indebted to Rice, Barton & Fales, Worcester, Mass., for the information and illustrations used in this article.

Golf-Ball Manufacture[1]

Novel Method of Winding a Tube of Rubber on the Core

THE center or core of the standard golf ball is wound with a thread of high grade rubber applied under tension to impart the required resiliency to the ball. An improved method of winding golf-ball centers consists in wrapping about the center a single tubular envelope of stretched rubber folded upon itself in overlapping folds evenly distributed around the core.

The mechanism for accomplishing this result is indicated by the illustration, which shows it in longitudinal section. It has a long tubular mold *A* with a slightly tapering bore within and through which the ball center *B* is rotated and at the same time rolled up within a thin-walled, tapered, pure gum tube. In its unstretched condition this tube or sheath is about one-fourth the diameter and length of the mold within which winding takes place. The smaller end of the tube is stretched over the core and fastened to it by being cemented about its edges.



Kuhlke Golf-Ball Winder

Thus attached, the tube and ball are placed in the mold and the larger end of the tube is there clamped airtight by a fitting *C* piped to the air-pressure tank *D* from which air pressure is admitted to stretch the rubber tube and push the attached ball center to the farther end of the mold. The rubber is thus tensioned and the ball center is pushed into contact with the winding mechanism.

A push rod *E* is mounted for sliding movement in a stuffing box at the end of the mold. On the end of the pusher within the mold are pivoted a number of swinging fingers *F*, the outer ends of which are provided with rollers, the function of which is to engage the ball core and roll it in the mold. Thus the axis of rotation is changed constantly during the rolling operation in order to distribute the folds of the rubber tube evenly over the entire surface of the core. The slide rod *E* as it advances into the mold is caused to turn by the engagement of the pin *G* on the mold with the rotatable threaded shaft *H*. During the wrapping or rolling process it is necessary to keep the rubber tube or envelope at a constant degree of expansion or tension.

The air pressure can be equalized on opposite sides of the core, if desired, through a pipe *I* connecting at both ends of the mold. Motion is imparted to the push rod *E* by a piston rod *J*, attached to the cross-head *K* and actuated in the cylinder *L* by compressed air piped from tank *D*.

When the ball center is forced to the larger end of the mold, it will have wound upon it a series of crossing folds or flutes of rubber under uniform tension, which will give it the required elasticity. The tubular jacket or sheath presents no exposed edges of rubber as in the usual thread winding; therefore it cannot fray or break down, which is the cause of rubber thread losing its elastic life and resiliency.

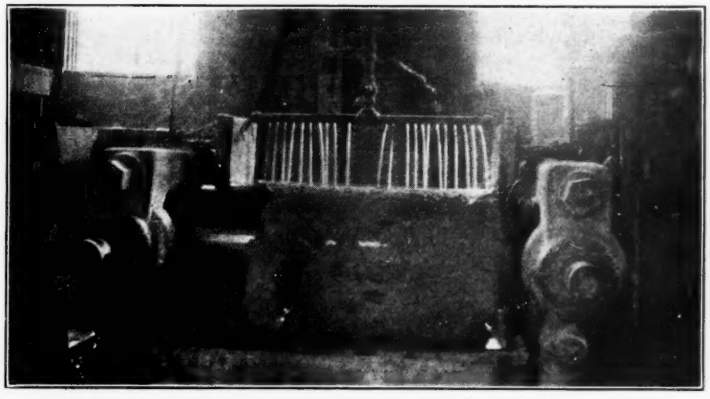
After the winding operation is completed, the clamping cap at *C* is removed and the ball discharged from the mold. It is then covered and completed in any accepted manner.

[1] U. S. Patent No. 1,715,661, June 4, 1929.

The Manufacture of Gem Duck Coating

MORRIS M. DANOVITCH

GEM duck plays an important part in the manufacture of shoes, but little is known of the process of manufacture. This is because it is a specialty product and but few companies are engaged in its production. Although given minor consideration in the rubber industry, it is, nevertheless, a product which requires constant control, close supervision, and intensive research. Gutta percha, the basis of gem duck coating, is closely related to rubber in many respects. Due, however, to its highly resinous nature, it cannot be vulcanized as rubber is and hence it presents its own particular problems in handling and manufacture. The importance of gem duck coating can be best realized when one considers that it is contained in 95 per cent of all the men's welts and a good percentage of the better grade of women's and children's welt shoes.



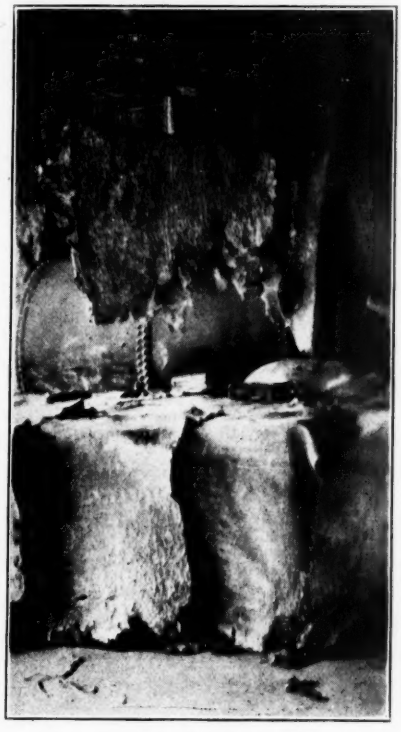
Washing Gutta Siak

The basis of gem duck coating is gutta percha, which is obtained as a milky fluid from certain tropical trees mainly of the genus *Dichopsis* found mostly in Sumatra, Borneo, and the Malayan Peninsula.

Pure gutta percha is colorless, but commercial grades are not, because of the coloring absorbed from the contained bark, leaves, etc. Chemically, gutta percha is a hydrocarbon, containing 86 per cent carbon, 12 per cent hydrogen, and 2 per cent oxygen. It comprises a mixture of solid gutta and two resins, one soft and the other hard. At ordinary temperature gutta percha is fairly firm, unaffected by cold, and has no elasticity, but when heated, it softens and becomes plastic and adhesive. On cooling, it returns to its original condition. It is this property primarily which makes it so useful in the manufacture of gem duck coating.

Gutta Siak

The type of gutta percha most applicable for gem duck coating is gutta siak, a combination of gutta percha, pontianak, and the usual adulterants. As it comes into the United States in its crudest form, it is very wet and contains bark, sand, dirt, and other impurities. Before a lot of gutta siak is used, four or five samples taken at random are sent to the laboratory for analysis. Here it is compared with a standard for color, moisture, texture, and minimum impurities. Gutta siak on analysis before washing averages 25 per cent moisture, 50 per cent acetone extract of resinous matter, 2 per cent ash, and the remainder volatile matter. Having been found satisfactory, the gutta siak is ready for its first stage in the manufacture of gem duck coating: namely, the elimination of moisture and impurities by washing.



Drying Sheeted Siak

Washing Gutta Siak

Gutta siak is washed on a mill consisting of two corrugated rolls revolving at variable speeds, similar to that employed in washing the common grades of rubber. Above the bite of the rolls is a water connection for washing out the impurities. The pieces of siak which are 20 by 12 by 7 inches are too thick to go through the washer; so they are first split in two with an ax. In cold weather when the siak is chilled, it must be slightly softened with heat before going through the washer. Siak washing is carried out in two operations. First it is passed through the mill and reduced to ¾-inch thickness. Then it is passed through again and brought down to a thin sheet approximately 1/16-inch thick. During these operations the mechanically held moisture is forced out while water dripping from above washes out the impurities present.

The sheeted gutta siak is then dusted with talc to prevent the surfaces from sticking to each other, and hung up in a drying shed to remove the last traces of moisture. The temperature of the drying room must be controlled care-

NOTE—The author of this article is chemist of the Plymouth Rubber Co., Inc., Canton, Mass.

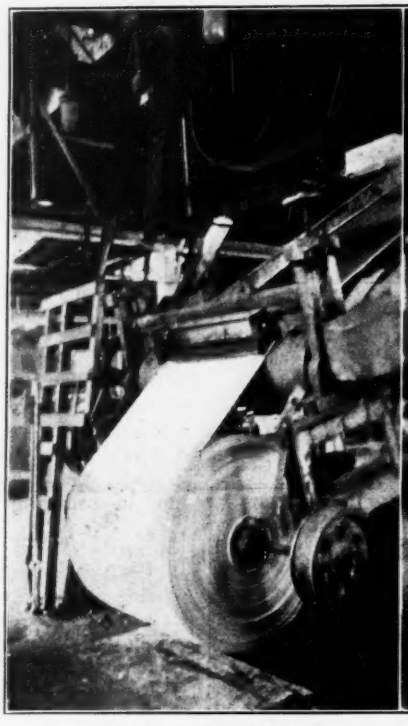
fully between 60 to 70° F. The sheets of siak are hung over lines with plenty of room between them for free circulation of air. Forty-eight to seventy-two hours are usually sufficient for proper drying. Longer periods make the siak too dry and brittle. This drying operation is very important as it not only gives the residual moisture a chance to evaporate but also seasons the siak. This beneficial effect is necessary in order to make the best gem duck coating.

At the end of the drying period samples of the gutta siak are sent to the laboratory for determination of its moisture content, which should not exceed the allowable amount. The average loss by washing and drying is 25 per cent. The dried sheets are then weighed for mixing.

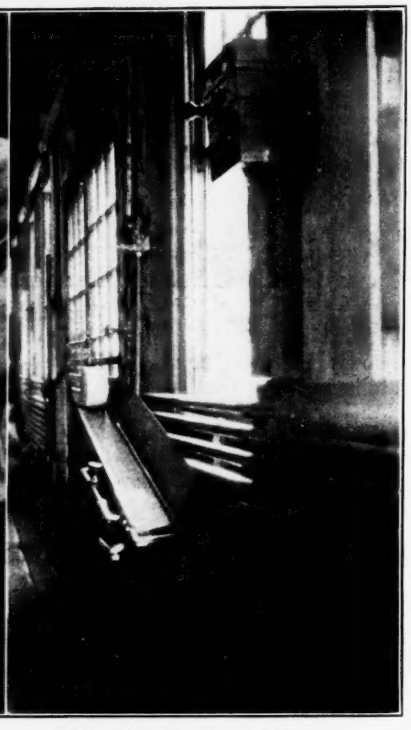
Mixing

The mixing is done on the ordinary rubber mill equipped with steam, cold water, and a scraper knife on the rear roll for easy removal of the mixture. Careful mixing is necessary else the siak will be injured by over-milling. The proper method of procedure is to mix the siak alone on a warm mill until it is soft and plastic; then the ingredients are added and the mixing completed.

Gutta siak alone does not make the most satisfactory gem duck coating. It is too brittle, does not soften quickly enough when heated, and sets too soon when cooled. Consequently in the mixing, various ingredients are added to give it the necessary qualifications. These additions include fillers of good grade and certain types of softeners. It is the proper combination of these ingredients with gutta siak which enables gem duck coating to retain its softness for a sufficient period of time after heating. Improper compounding of the gutta siak causes the coating to dry, lose adhesiveness and strength, and eventually crumble to dust.



Coating Gem Duck



Softening the Coated Duck

Solution Mixing

After mixing, the material is scraped from the rolls and sent to the churning room while warm. Here it is dissolved in a 500-pound-capacity churn with sufficient naphtha to reduce it to a plastic state so that it can be spread or coated. Thorough churning requires between twenty-four and forty-eight hours. Overheating and overchurning must be avoided not to injure the material. The chemical control of the naphtha used is very important. A good grade of naphtha is necessary to obtain the best results. Odorless 70 to 72° Bé. naphtha containing no petroleum distillate and not too high an end point has been found most suitable. The presence of oil even in minute quantities is detrimental to the coating because, boiling at high temperature, it does not evaporate but remains in stock. This causes the coating to soften and deteriorate, and prevents proper drying. Every shipment of naphtha must be tested for specific gravity, distillation range, and residue before using.

After churning, the stock is drawn out in tubs ready for spreading or coating on the duck. This is done on a common spreading machine. The duck used is 8 to 9-ounce, cotton duck, 30 inches wide with average breaking strength of 120 to 130 pounds per square inch. Before coating, the duck is carefully conditioned and checked for strength, weight, and moisture. The latter must not be present as it prevents the composition from adhering properly to the duck. The fabric is spread with eight or nine ounces of coating per yard and allowed to dry to evaporate the naphtha.

Drying Coated Gem Duck

The coated duck cannot be rolled up until the naphtha has thoroughly evaporated. Unfortunately heat cannot be used as an aid to the evaporation as it would soften and destroy the properties of the gutta siak. Sometimes to hasten its drying, the material is festooned in a manner similar to that employed in dry heat curing of auto topping and allowed to dry at constant room temperature of 60° F. Cold air blown on the coating helps to evaporate the naphtha.

Four important factors influence drying: (1) An inferior gasoline will slow drying considerably owing to the presence of residual oils. (2) Water, introduced into the churn when fresh siak is used, retards drying and leaves the coating tacky. (3) Gutta siak varies physically as well as chemically. One lot may have more affinity for naphtha than another and so retain the solvent more tenaciously. This necessitates a longer drying period. (4) On humid days in midsummer much difficulty is encountered as naphtha evaporates then very slowly, and the warm air tends to soften the coating.

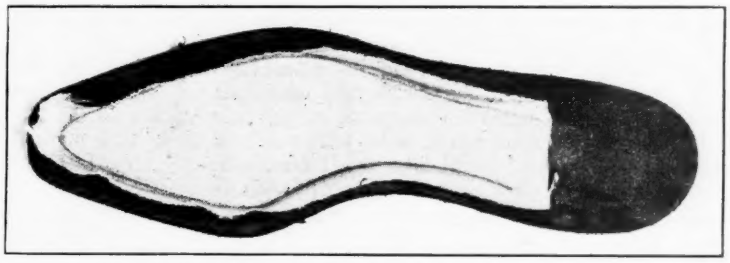
Using Gem Duck

After the spread coating has sufficiently dried so that it can be rolled without adhering to the back of the duck, the material is run into rolls of 400 to 500 yards. Next it is cut on a lathe or stripping machine into 100-yard rolls of widths specified by the shoe trade. For men's shoes the duck averages 3¾ inches in width and for women's, 3¼ inches. After cutting, the rolls are stamped with the date run and packed in bundles or cases for shipment.

Gem Duck in the Shoe Factory

After the leather innersole has been lipped to permit

sewing on the shoe vamp, a gem duck sole form is fitted to the inside against the lip of the innersole and sewed through the latter. The type of gem duck used today is "economy gem," so called because it uses less duck than the old full gem which extended inside and outside the lip of the innersole. Before the coated duck is applied to the innersole, the coating is softened by heat so that it will be adhesive. A steam heater is most economical for heating. Where steam is not available, electricity is satisfactory. In both cases the heaters are enclosed steel chests 4 feet long, 6 inches wide, and 4 inches deep. In the steam heater the top platen is perforated while in the electric one it is solid. The heater sets in front of the shoe operator. A roll of coated gem duck is arranged so that it can be drawn duck side down over the heater and left there a minute or two at 105° F. until sufficiently softened. It is then pressed into the innersole, coated side down, and cut to size. When the coating cools, it forms a perfect bond with the innersole.



Innersole with Coated Gem Duck in Place and Ready to Be Stitched to the Lip

Advantages of Gem Duck

The advantages of gem duck in shoe innersoles are: (1) It strengthens the innersole. (2) It reenforces the stitching. (3) It makes the shoe and innersole more flexible. (4) It improves the waterproofing quality of the shoe. (5) It enables the shoe manufacturer to use a thinner innersole.

Many attempts have been made to find a satisfactory substitute for gutta siak in gem duck coating, but none has been found thus far. The natural resins present in siak are not replaceable by synthetic resins. However, it is probable that sooner or later a satisfactory substitute will be found.

Spray Sulphur for Rubber Tree Protection

Which Is Also of Interest to Rubber Compounders

VINCENT SAUCHELLI[1]

THE prevalence of mildew attacks on plantation rubber trees in the Middle East is just now receiving considerable attention in Java. A recent article[2] referred to a feature on this subject appearing in a leading Dutch periodical. This need cause no surprise. Mildew is only one more of the numerous types of fungous attacks that was bound to show itself sooner or later on rubber trees. In this country mildew is most familiar on grape-vines and on rose bushes; but it is also found on many other cultivated plants.

Fungous diseases in general are controlled by sulphur. Sulphur is indispensable in our country to the orchardists in the control of apple scab and peach brown rot. Sulphur alone and in combination with lime in fact makes possible the maintenance of all commercial orchards. Without sulphur it is inconceivable how we should obtain our major fruit crops.

Because of the wide-spread use of sulphur in its various forms to control general fungous diseases and the demand for the most efficient types of spray and dusting equipment, the United States has easily come into the front rank of nations in the knowledge and methods of plant-disease work. Hence, the recent announcement in this country of an improved type of sulphur suitable to orchardists and other agriculturists to combat successfully fungous diseases aroused much interest in chemical and agricultural circles. This improved sulphur is obtained as a by-product in the liquid purification of illuminating gas.

The outstanding characteristics of this sulphur is the fineness of particle size. Ordinary 300-mesh ground sulphur particles measure from 50 to 200 microns. (One micron equals 0.001 millimeter.) This improved sulphur is composed of particles ranging from 4 to 15 microns, or all particles are less than 3/5000-inch in diameter. It has been used with great success to control the various fungous diseases commonly attacking our major fruit, flower, and vegetable plants. Owing to the fine particle size it is more toxic, since in general it can be stated that toxicity is due to the rapidity with which sulphur can oxidize to the higher forms of sulphur oxides which do the killing. More sulphur surface is exposed by these finely divided particles. It takes less of this sulphur to cover a given area of foliage; the coverage is more uniform; it sticks better to the leaves; and is therefore more economical as well as more effective. This by-product sulphur is prepared for use as a wet spray, or as a dry lime-sulphur, or as a fine dry material for dusting purposes.

The success of this sulphur is evidenced by its wide use in California, New Jersey, and Illinois, where orchardists and nursery men have had an opportunity so far to obtain it. Because of its proven toxicity to fungi of different species and to mildew in particular, it should be considered seriously wherever mildew is to be controlled on large areas such as rubber plantations. The economy and the effectiveness of it need no stressing especially where, as in the Middle East, the heavy, almost daily rainfall requires a quick-acting sulphur fungicide which will give good coverage and stick to the foliage.

Another feature of this new sulphur which will appeal to the manufacturers of rubber goods is its possible use for vulcanizing with latex. This is a new development which may bring forth results not possible with coarser sulphur products. The almost-colloidal dimensions and the fact that this sulphur does not have to be processed to make it wettable (which thus avoids undesirable wetting agents in the compounding mixture) are points that should appeal to rubber-research workers. Already several leading manufacturers in this country are carrying on large-scale tests to utilize this unusual product.

[1] The Koppers Co. Laboratories, Pittsburgh, Pa.
[2] INDIA RUBBER WORLD, July 1, 1929, p. 94.

Dealers' Stocks of Rubber F

THE initial survey of stocks of waterproof rubber footwear held by dealers has just been completed by the Rubber Division of the Department of Commerce[1] Reports received from 26,675 dealers throughout the United States show their total stocks of rubbers, arctics, gaiters, and rubber boots, as of July 1, 1929, amounted to 6,615,171 pairs. The stocks per dealer averaged 248 pairs, consisting of 22 pairs of rubber boots, 11 pairs of lumbermans and pacs, 22 pairs of heavy arctics and gaiters, 34 pairs of light arctics and gaiters, 29 pairs of style cloth gaiters, 14 pairs of style rubber gaiters, and 116 pairs of rubbers.

There is a carry-over of stocks both by dealers and manufacturers at the end of every season. The present and subsequent annual surveys will determine the extent of the normal dealer carry-over, and enable manufacturers and dealers to judge how business, during the coming season, may be affected by the carry-over, both for individual states and the country as a whole. It is believed the dealer carry-over this year is higher than usual, but a definite idea as to the normal carry-over can be secured only through several surveys.

The number of dealers reporting stocks of each class of rubber footwear, the number of pairs reported, and the average pairs per dealer, as of July 1, 1929, are shown in Table 1.

TABLE 1—TOTAL REPORTED STOCKS, SHOWING AVERAGE STOCKS PER DEALER

Type of Footwear	Dealers Reporting		Stocks on Hand		Average Stock, Pairs
	Number	Per Cent of Total	Pairs	Per Cent of Total	
Rubber boots	19,828	74.3	588,102	8.9	29.3
Lubermans and pacs	10,017	37.6	294,304	4.4	29.3
Heavy arctics and gaiters	15,839	59.4	579,047	8.8	36.6
Light arctics and gaiters	15,350	57.5	910,485	13.8	59.3
Style gaiters, cloth	12,378	46.4	770,460	11.6	62.2
Style gaiters, rubber	8,353	31.3	378,684	5.7	45.3
Light and heavy rubbers	20,704	77.6	3,094,089	46.8	149.5
Total	26,675	100.0	6,615,171	100.0	248

It may be observed that of all dealers reporting stocks, only 31.3 per cent had stocks of style rubber gaiters and 37.6 per cent lumbermans and pacs, while 77.6 per cent were holding stocks of rubbers and 74.3 per cent rubber boots.

A rough indication of the varying market demand for rubber footwear in different parts of the country is given by showing the percentage of dealers reporting stocks of each class of footwear for each region. For example, taking the total number of reporting dealers in New England as 100 per cent, it appears that 60.2 per cent of these dealers handle lumbermans and pacs, and 87.2 per cent handle rubbers, the highest percentage of dealers with stocks of these items in any region. The West South Central States, while furnishing a poor market for rubber footwear in general, have a higher percentage of dealers stocking rubber boots than any other area. The dealer-demand for rubber boots appears to vary less throughout the country than for any other item. Arctics and gaiters of all kinds seem to be most generally stocked in the North Central States. The states included under each region are indicated in Table 2.

TABLE 2—PERCENTAGE OF DEALERS REPORTING EACH CLASS OF FOOTWEAR, BY REGIONS

Regions	Rubber Boots, Per Cent	Lumbermans and Pacs, Per Cent	Arctics and Gaiters		Style Gaiters		Rubbers, Per Cent	Total Dealers, Per Cent
			Heavy, Per Cent	Light, Per Cent	Cloth, Per Cent	Rubber, Per Cent		
New England	73.7	60.2	63.1	72.4	57.5	30.1	87.2	100.0
Middle Atlantic	74.9	55.8	70.9	71.6	54.6	34.1	84.8	100.0
E. No. Central	80.5	49.2	75.8	70.8	59.6	40.1	85.2	100.0
W. No. Central	72.0	30.5	79.3	75.2	58.1	38.3	82.1	100.0
So. Atlantic	63.2	25.2	39.0	37.0	31.2	22.2	78.4	100.0
E. So. Central	73.6	17.2	38.1	35.3	27.7	24.0	59.9	100.0
W. So. Central	86.0	6.7	25.2	28.3	15.0	16.0	46.4	100.0
Mountain	66.9	39.9	62.3	53.7	42.8	29.3	67.2	100.0
Pacific	72.4	30.7	19.5	19.6	32.3	24.0	75.2	100.0
Total U. S.	74.2	37.4	59.5	57.6	46.6	31.2	77.7	100.0

[1]Special Circular No. 2,400, Rubber Division, Department of Commerce, Washington, D. C.

Similar percentage studies for any state may be made by a dealer on the basis of statistics in Table 3. For example, by making a table of the percentage which stocks of each type of footwear bear to the total stocks reported for his state and comparing it with a similar table based on his own stocks, the dealer can determine whether or not his stocks are distributed by types as those of other dealers in the state. The statistics also give an indication of the popularity of different types of rubber footwear in each state, and thus should help every dealer to judge whether or not it is desirable to add new types to lines already carried.

177 Dealers Holding Over 1,000 Pairs of Rubbers

A special tabulation of rubbers held by dealers with over 1,000 pairs each in stock shows 177 dealers holding 627,087 pairs of rubbers, of which 312,355 pairs were held by 13 distributers located one each in California, Connecticut, Illinois, Michigan, Pennsylvania, and Utah; two each in Massachusetts and New York, and three in Ohio. Table 4 of stocks, by states so far as possible without disclosures, makes it possible to determine how much these large stocks influenced the "average stocks per dealer" figure for various regions. For the United States as a whole, the average stock of rubbers per dealer would be 121.7 pairs if these large dealers were not included in the average.

TABLE 4—LARGE STOCKS OF RUBBERS, BY STATES

	Number of Dealers	Pairs of Rubbers
California and Oregon	6	53,355
Connecticut	5	28,201
Colorado and Utah	3	19,362
Illinois	3	21,726
Indiana and Minnesota	4	6,487
Iowa and Kansas	3	7,888
Kentucky, Virginia, and West Virginia	5	12,004
Maryland and District of Columbia	5	10,089
Maine	8	16,033
Massachusetts	26	85,924
Michigan	3	41,455
New Hampshire	6	9,324
New Jersey	9	11,024
New York	42	127,072
Ohio	10	86,008
Pennsylvania	23	56,235
Rhode Island	3	5,400
Wisconsin	7	11,673
Unallocated	6	17,827
Total	177	627,087

Dealers Usually Handle More Than One Make

Dealers were asked to state the number of different makes of rubber footwear which they handle. Only 19,426 of the 26,675 dealers reporting stocks answered this question. An analysis of these replies shows that fewer dealers limit stocks to one make than handle two makes. Only about 7 per cent of the dealers handle over three different makes. It would appear that dealers might obtain better results by concentration of effort on one line of merchandise, and at the same time reduce inventory, carrying charges, and general overhead expenses. Unless the separate makes are in different items (as for example one make of rubber boots, another of rubbers, and another of style gaiters), there would

Footwear as of July 1, 1929

TABLE 3—DEALERS' STOCKS OF WATERPROOF RUBBER FOOTWEAR IN UNITED STATES, JULY 1, 1929.

	Total Forms	Rubber Boots		Lumbermans & Pacs.		Heavy Arctics and Gaiters		Light Arctics and Gaiters		Style gaitors, cloth		Style gaiters, rubber		Light and Heavy Rubbers	
		Dealers	Pairs	Dealers	Pairs	Dealers	Pairs	Dealers	Pairs	Dealers	Pairs	Dealers	Pairs	Dealers	Pairs
New England:															
Maine	380	252	7,792	287	16,094	218	5,444	245	20,921	254	10,369	103	4,168	316	62,586
N. H.	135	96	2,863	114	5,653	95	2,368	106	12,835	76	4,844	48	2,410	93	30,961
Vermont	205	194	7,712	182	7,809	171	3,815	155	7,135	117	4,971	74	4,934	188	28,927
Mass.	549	400	20,306	244	6,126	331	9,489	410	53,434	315	39,345	164	11,701	492	182,061
R. I.	96	63	2,262	29	596	39	1,401	62	4,558	35	3,058	23	1,436	85	23,062
Conn.	242	157	5,693	94	2,189	141	4,303	165	15,369	110	10,620	63	2,765	200	69,256
Total	1,577	1,162	46,628	950	38,467	995	26,820	1,143	114,252	907	73,207	475	27,414	1,374	396,853
Middle Atlantic:															
New York	1,778	1,387	74,784	880	32,667	1,104	38,435	1,227	96,323	927	74,543	572	29,302	1,562	421,498
New Jersey	364	295	9,430	90	1,422	235	8,905	246	15,452	185	15,762	116	7,146	325	75,304
Penna.	2,190	1,565	60,260	1,448	60,619	1,654	81,052	1,533	117,039	1,257	95,382	788	55,784	1,788	371,235
Total	4,332	3,247	144,474	2,418	94,708	3,073	128,422	3,106	228,814	2,369	185,687	1,476	92,232	3,675	868,037
East No. Central:															
Ohio	1,448	1,208	42,375	721	14,144	1,075	41,135	973	62,968	856	72,287	559	21,085	1,219	254,280
Indiana	763	665	16,443	360	6,782	601	21,551	486	22,501	450	23,273	309	9,485	635	76,519
Illinois	1,288	1,063	45,834	386	12,282	1,009	45,699	899	76,903	791	68,912	501	21,289	1,078	135,043
Michigan	817	637	30,638	519	24,297	604	27,137	640	44,861	477	30,623	363	17,202	721	163,739
Wisconsin	996	685	10,088	620	19,594	771	24,829	748	37,941	584	29,527	392	15,493	876	141,177
Total	5,289	4,260	145,378	2,606	77,099	4,060	160,351	3,746	245,174	3,158	224,622	2,124	84,554	4,529	770,758
West No. Central:															
Minn.	1,040	597	9,530	577	22,195	837	39,976	850	75,083	584	43,906	397	15,911	920	128,378
Iowa	1,023	816	13,388	285	2,824	799	41,033	778	40,013	627	28,502	425	14,024	891	102,907
Missouri	225	713	15,066	277	3,838	616	19,338	528	19,019	449	14,536	289	7,916	573	37,383
No. Dakota	274	99	851	94	880	228	9,992	225	9,936	185	9,444	95	3,583	246	25,920
So. Dakota	353	202	2,122	60	1,200	299	12,477	283	11,537	228	9,878	164	4,327	306	28,078
Nebraska	536	407	5,180	62	1,103	458	19,566	427	18,127	347	13,968	226	6,830	452	31,768
Kansas	558	486	10,998	92	2,034	417	17,384	373	11,793	257	7,460	172	4,768	397	21,736
Total	4,609	3,320	57,197	1,407	34,074	3,654	159,816	3,464	185,508	2,677	127,794	1,768	57,359	3,785	376,170
South Atlantic:															
Delaware	47	37	1,940	7	91	28	1,070	29	1,174	18	1,845	9	390	41	5,722
Maryland	430	334	8,041	122	1,835	260	6,310	202	10,768	160	12,776	95	10,513	373	46,721
D. C.	57	29	1,152	3	41	16	387	25	1,067	23	3,830	11	1,319	49	12,483
Virginia	793	568	16,527	170	2,503	329	9,868	304	16,363	251	15,223	182	23,502	636	67,516
W. Va.	294	544	8,291	468	9,940	547	10,553	530	16,480	400	18,637	272	9,930	785	68,069
No. Carolina	434	300	8,332	36	858	62	914	85	2,437	101	3,500	77	5,210	324	28,582
So. Carolina	167	82	1,686	4	22	9	93	13	306	31	566	23	1,030	134	8,932
Georgia	224	83	1,451	5	93	9	120	11	210	22	635	40	1,206	171	9,531
Florida	97	72	2,053	4	130	4	31	---	---	8	496	13	556	31	1,423
Total	3,243	2,049	49,473	819	15,513	1,264	29,346	1,199	48,805	1,014	56,908	722	53,656	2,544	248,979
East So. Central:															
Kentucky	755	528	11,289	197	3,135	417	10,167	364	10,573	322	8,001	232	7,118	537	29,094
Tenn.	421	353	3,580	55	1,019	176	3,074	156	4,707	106	2,601	105	2,900	276	17,159
Alabama	283	153	2,505	38	783	31	491	42	1,002	47	2,226	59	1,961	150	6,249
Miss.	398	332	7,709	29	396	84	1,461	93	1,529	39	1,130	50	1,500	148	5,254
Total	1,857	1,366	25,083	319	5,333	708	15,193	655	17,811	514	13,958	446	13,479	1,111	57,756
West So. Central:															
Arkansas	405	370	9,540	50	566	98	1,541	94	2,367	71	1,746	65	1,879	171	5,150
Louisiana	238	204	6,566	11	240	19	496	18	574	26	1,092	26	919	99	4,483
Oklahoma	363	333	8,927	35	722	137	2,344	142	3,195	81	2,216	71	1,688	168	6,415
Texas	953	779	15,483	35	362	240	3,903	301	5,539	117	2,716	151	4,205	471	18,030
Total	1,960	1,686	40,516	131	1,890	494	8,284	555	11,676	295	7,770	313	8,691	909	35,078
Mountain:															
Montana	247	141	2,959	129	2,338	180	7,536	172	6,584	126	4,840	91	2,810	202	18,089
Idaho	155	99	2,102	74	1,417	86	2,611	81	2,422	58	2,344	53	1,925	104	9,339
Wyoming	113	65	1,391	50	976	87	3,107	66	1,735	50	1,716	29	947	81	6,089
Colorado	308	234	4,781	99	1,337	213	5,221	184	4,675	140	4,839	89	1,926	193	13,328
New Mexico	63	43	655	19	185	39	793	24	509	23	487	12	335	35	1,892
Arizona	79	56	3,169	17	460	13	150	11	223	8	158	9	255	26	1,916
Utah	183	137	5,706	64	1,660	93	4,786	81	4,795	87	6,561	53	2,074	128	29,887
Nevada	40	20	420	22	298	29	471	19	282	17	480	12	218	29	2,109
Total	1,188	795	21,183	474	8,671	740	24,685	638	21,225	509	21,425	348	10,500	798	82,649
Pacific:															
Washington	427	265	5,785	261	4,082	118	1,981	127	3,131	181	6,454	115	3,155	344	34,216
Oregon	288	208	5,800	141	1,974	88	1,437	72	4,060	133	7,278	90	2,944	230	23,761
California	1,010	777	30,187	127	3,034	131	3,821	139	4,069	244	13,716	209	9,255	724	101,290
Total	1,725	1,250	41,772	529	9,090	337	7,239	338	11,260	558	27,448	414	15,354	1,298	159,267
Total U. S.	25,780	19,135	571,704	9,653	284,845	15,325	560,156	14,844	884,526	12,001	738,819	8,086	363,239	20,023	2995,547
Unallocated	895	693	16,398	364	9,459	514	18,891	506	25,959	377	31,641	267	15,445	681	98,542
Grand Total	26,675	19,828	588,102	10,017	294,304	15,839	579,047	15,350	910,485	12,378	770,460	8,353	378,684	20,704	3094,089

appear little necessity for such diversification of makes handled.

Number of Makes Handled	Number of Dealers	Per Cent of Total
One make	7,354	37.9
Two makes	7,686	39.5
Three makes	2,981	15.3
Four makes	894	4.6
Five makes	324	1.7
Six makes	193	1.0
Total	19,426	100.0

The number of names on the mailing list used for this survey was 131,500. In addition to the reports of stocks from 26,675 dealers, 1,775 questionnaires were returned marked undeliverable by postal authorities, 4,516 firms reported that they do not handle waterproof rubber footwear, 1,337 questionnaires were returned with notice that the firms to which they were addressed are now out of business, and 1,034 forms were received from dealers reporting stocks entirely sold out and from firms reporting no stocks on hand without specifying whether rubber footwear was handled, making the total number of responses 35,337.

Statisticians may be able to use these data in estimating the total number of active footwear dealers in the United States.

Electrolized Vulcanized Oils[1]

THAT vulcanized solidified fatty oil products produced by an electrolytic method have more rubber-like properties than any other known oil product and are valuable compounding ingredients is asserted by László Auer, European rubber technologist. Mixed in proportion of 100 parts of rubber to 50 of vulcanized solidified oil, products are said to have shown equal or higher tensile results and elongations than corresponding mixtures in which 100 parts of rubber were not diluted with any oil product. Ordinary factice or vulcanized oil products, on the contrary, he says, show decreases in such properties when they are used in the same ratio.

Linoxyn, vulcanized fatty oil (factice or rubber substitute), and vulcanized rubber, it is held, are in a colloidal sense much alike, and are all non-thermoplastic products. They are not soluble in organic solvents, but swell readily. Ordinary rubber is, on the contrary, a thermoplastic product, which becomes softer under the action of heat, and when masticated, is soluble in some organic solvents. When rubber is heated in vacuo for a long time at about 250° C., it melts to a viscous liquid, which on cooling does not return to its original state. During the whole process the loss in weight is less than 1 per cent and no appreciable chemical decomposition takes place; the rubber probably undergoes a physical disaggregation. Such disaggregated rubber is similar to viscous heat-bodied stand oils.

Experiments have been carried out to vulcanize such heat-disaggregated rubber under similar conditions to those under which stand oils are vulcanized, and both products have been found to be remarkably similar in appearance. Disaggregated rubber and vulcanized rubber have both corresponding types in fatty oil products. The new solidified oil products containing electrolytes may be considered to be the result of the first attempts to get oil products similar to raw rubber. Up to now only raw rubber has had no analog in fatty oil products. Not only in appearance, but also in physical properties are such solidified oils distinctly similar to raw rubber, and especially with regard to swelling and behavior toward organic solvents. The only marked difference between them is that, in spite of the fact that both are thermoplastic, the molten solidified oils return to their original state after cooling whereas the rubber largely loses its remarkable structure when melted.

The aggregation of the jelly system of a solidified fatty oil can be carried still further. Sulphur aggregates solidified fatty oils in a similar way to that in which it aggregates rubber or raw fatty oils. As the solidifying process is to be considered as a partial aggregation, the solidified oils require much less sulphur for their vulcanization than the raw oils. To a notably small absorption power toward oxygen is also attributed excellent aging properties of solidified oils. If compounded in the proper way, it is said, some of such oil products act as rubber antioxidants.

Having obtained interesting results with the electrolyte treatment of fatty oils and resins, it was decided to try the method with other isocolloidal systems, especially with raw rubber, and it was found that the rubber jelly might also be influenced by the addition of electrolytes. In order to produce thorough dissolution of the electrolytes in the rubber they were milled with the latter and the mix was heated. It is said that products obtained are very similar to the gutta-percha-like, balata-like, and shellac-like thermoplastic rubber-conversion products known as "thermoprene." The behavior of the thermoprene products toward organic solvents, that is, their improved solubility, is said to be similar to the property of the oil, solidified by means of sodium sulphide, of being very easily emulsified in water.

[1] Abstract from "Colloid Chemical Changes in Rubber and Fatty Oils." Dr. Auer, *Inst. Rubber Ind. Trans.*, London, Vol. IV, No. 6, Apr., 1929, pp. 499-520.

Proofing Fabrics with Latex

THE manufacture of rubber goods direct from latex and dispersions is a subject for active research in rubber technology. The following process for proofing fabrics with rubber latex has recently been patented in Great Britain.[1]

The rubber is agglomerated from latex on a rubber dispersion upon the fabric which is fitted to or in contact with a porous backing. The fabric is first brought into contact with liquids containing substances facilitating or causing agglomeration and is then brought into contact with an aqueous dispersion of rubber, which may be either natural, artificial, preserved, compounded, or concentrated, and may contain inorganic materials.

As an illustration, a rubber-coated glove is made by fitting the fabric glove to a hollow porous former of porcelain, arranged so that its interior may be connected to a suction pump. It is then dipped for two minutes into a solution of calcium chloride, potash alum, or formic acid, allowed to drain, and wiped with a cloth. It is dipped for one minute into the latex, and then the interior of the former is connected to the suction pump for one minute. It is then removed from the latex, inverted, and drained, and while still under suction, is placed in an oven at 100° C. for fifteen minutes. The glove may then be cured in known manner.

In making rubber-coated fabric for tires, an endless piece of fabric is passed through a bath of compounded latex. The bath is fitted with one or more rotating porous rollers, which are coated or impregnated with coagulating medium so that the latter is between the rollers and the fabric passing over them. The fabric then passes over one or more porous rollers, which may or may not dip into the latex, and to the interior of which suction is applied. Drying of the fabric may be effected by heat, reduced pressure, or dehydrating substances. This last example may be modified by coating the fabric with coagulating medium and passing it over porous rollers not coated with coagulating medium, so that rubber is deposited on the fabric from the latex, the rubber coating being subsequently stripped off before or after vulcanization.

[1] British Patent No. 309,391, June 6, 1929.

Merchandising

Problems of Merchandising—Analysis or Sales Research Necessary before Any Remedy Can Be Applied —The Elements of Success Are the Same in Any Industry

A. T. HOPKINS

MERCHANDISING is quite a new word in the rubber business. It used to be "Sales," and salesmen were largely order-takers until after the World War. For many years between 1900 and 1919 it was a constant struggle on the part of the factory to produce enough goods to satisfy the demand, with constant improvement in quality and reduced price. This constant struggle led to analysis of costs, compounds, methods, and equipment, and consequent improvement all along the line.

It is only in the last few years that adequate consideration has been given to the problems of merchandising. The rise of the mail-order houses, the chain stores, and department stores breaking into the field of the jobber has brought a multitude of problems. The fall in the value of the dollar reflected in transportation costs and cost of traveling has boosted cost of sales in dollars and in percentage, while in many cases cost of production has remained constant or actually decreased.

The Selling Problem

Some companies have tried to solve the problem by selling to the mail-order houses, but they cannot sell to mail-order houses and jobbers also. Some sell direct to the retailer, taking the place of the jobber, and only succeed in shouldering the jobber's problems. Some sell through their own stores and they perhaps fare worst of all. Some think they can make money by selling a large volume at cost, and usually fail. One enterprising manufacturer is trying to solve the problem by teaching the retail stores how to operate at a profit.

A recent report has been put out by the Sherman Staff on the results of a study made among 839 retailers as to duplication of sales effort. The accompanying table shows the retailers' estimate of percentage of duplication of sales effort as over fifty per cent. The candid sales manager would probably admit that there was a loss of almost this amount in the general effort of his department. When one considers that the average of sales expense has doubled in the past ten years and that it all comes out of profits, this becomes very serious.

Now why is this and what is the remedy?

The factory has learned to use costs and to respect them. Costs are the result of analysis, and when the elements of cost are once determined, then the effort at reduction follows on every item and the sum total of reductions is large.

Within the past few years, however, analysis has been applied to sales problems with marked success, and this is as it should be. When we know as much about the details of selling cost as we do about factory cost, selling cost will be reduced likewise and profits on merchandise will be increased.

Sales Cost Analysis

An analysis of sales costs can probably be made from data already available. It should include total and detail sales of each salesman and of every article sold and the profit on each article for each month and for at least two years. This should form the basis of a sales report sent to each salesman. It should analyze service methods and results; get the user's point of view; learn what prospects are found and select the best ways of finding them; determine the best means of customer follow-up; study sales methods of the most successful salesmen; make a comprehensive study of competition; make sound suggestions for advertising, sales promotion, and all forms of publicity; and study all the problems of distribution.

When all this is done and applied, there still remains a need for all the business sense and judgment in the organization. The principles of success remain constant as they are founded on the laws of mathematics and psychology. A close scrutiny of credits and collections, the making of some profit on every sale, and a strong emphasis on quality, service, and fair prices are essential before, during, and after an analysis of your sales cost.

Analysis of 839 Retailers as to Calls per Week from Salesmen, Time Consumed in Sales Interviews, and Estimated Percentage of Salesmen Duplication

Retail Classification	Average Number of Weekly Calls from Salesmen: Jobber	Mfr.	Missionary	Investigation Survey	Total	Average Weekly Time Given to Interviews	Average Time Per Interview	Retailer's Estimate of Per Cent of Duplication of Sales Efforts	Retail Classification
Auto accessory	9.0	11.4	4.7	.13	25.23	6.0 hours	14+ minutes	37.5%	Auto accessory.
Department	41.7	58.6	4.5	.46	105.26	7.5 hours	4+ minutes	50	Department.
Drug	11.5	17.6	5.8	.50	35.4	6.6 hours	11+ minutes	52	Drug.
Electrical	12.7	8.4	3.0	.1	24.2	9.4 hours	15+ minutes	54	Electrical.
Furniture	7.3	12.3	6.0	.23	25.83	9.2 hours	21+ minutes	55.5	Furniture.
Grocery	10.1	7.9	4.4	.15	22.55	5.2 hours	13+ minutes	48	Grocery.
Hardware	13.0	12.9	5.8	.12	31.82	7.7 hours	14+ minutes	49	Hardware.
Jewelry	8.2	12.7	1.9	.13	22.93	6.7 hours	17+ minutes	54	Jewelry.
Men's furnishings	8.8	20.0	3.7	.35	32.85	6.0 hours	10+ minutes	49.2	Men's furnishings.
Radio	10.7	9.5	2.6	3.1	25.9	5.5 hours	12+ minutes	63	Radio.
Shoe	5.0	13.4	2.1	1.7	22.2	5.5 hours	14+ minutes	72.7	Shoe.
Stationery	10.0	15.6	2.2	.23	28.03	7.3 hours	15+ minutes	55	Stationery.
Tobacco	9.6	5.0	3.0	.06	17.66	2.9 hours	9+ minutes	79	Tobacco.
General average	11.5	16.0	4.3	.23	32.03	6.6 hours	12+ minutes	54.4	General average.

Sherman Staff, Inc.

EDITORIALS

Rubber Workers' Earnings Good

WHETHER the continued prosperity of the United States has or has not been the cause or the effect of high and stable wages for many years, a national Industrial Conference Board survey shows at least a close correspondence between the two. How labor's position has improved is indicated in the report on the buying power of an hour's work, it being from 42 to 45 per cent greater in 1928 than in 1914. Such better buying power has come to be regarded as an essential of prosperity, and hence the modern axiom of business—that trade flourishes only with workers' welfare. Practical appreciation of the justice and wisdom of helping workers to become larger consumers has particularly been shown by the rubber industry. It was one of the few in the nation in 1928 that paid as high as 65 cents an hour, or an average of $29.92 for a 46-hour week.

Supplies, Statistics, and Stabilization

OBSERVING crude-rubber consumption by American manufacturers mount from 366,140 tons in 1926 to 370,915 in 1927, 441,336 in 1928, and some 268,121 for the first half of 1929, producers are convinced that United States requirements for the present year will not be less than 500,000 and possibly 520,000 tons. Last year the rest of the world used 242,032 tons, compared with 221,000 in 1927, and for this year estimates range between 275,000 and 280,000 tons. At that rate world consumption for 1929 would reach about 800,000 tons. Producers claim that production of such magnitude is possible only when New York prices range between 25 and 26 cents a pound, and a possible famine is subtly suggested.

Even conceding that they may need half a million tons this year, American manufacturers still believe that there will be more than enough rubber to go round. Nor are they disposed to be hurried into commitments at figures much over current prices in order to fortify them against any threatened shortage. One of the most conservative agencies forecasts for 1928 on a low yield per acre a world production of at least 710,000 tons, and is confident that at least 50,000 tons more will be released for shipment from hold-over stocks. Nor does this regard a great offsetting factor, the huge amount of reclaim that is being increasingly used to replace crude rubber here and abroad, the United States alone in 1928 using 223,000 tons with corresponding gains in other countries.

But whether the future favors buyers or sellers most, plainly an outstanding need of the rubber industry is the minimizing of guesswork as to available raw material and to which may be coupled a plan whereby the activities of producers and consumers may be reasonably balanced. Many measures designed to bring about an economic equilibrium have been proposed by forward-looking leaders, but their practical application has failed through lack of accurate data on world stocks, inexact information as to planted acreage, and latterly through the absence of a free market statistical basis for estimating production capacity. Hence is the force of the contention of President Alexander at the recent session in Holland of the International Chamber of Commerce that the surest way to eliminate industrial uncertainty and to achieve stabilization generally lies in the most complete collection of trade data on every phase of production, keenly realized by leaders in the rubber industry; and certainly none in other fields would more readily cooperate with the Chamber in garnering such helpful statistics.

Rubber Dampens Traffic Vibrations

THREE leading British rubberware manufacturers, having well investigated its possibilities, are engaged in the commercial exploitation of rubber paving, convinced that therein lies an opportunity for substantial business. Considerable progress has been made in demonstrations within the past year or two, and areas of rubber paving can now be shown which have been standing up remarkably well under extremely severe traffic. In fact, it is in this latter condition, where serious damage through vibration may be done to buildings, with also discomfort and possible danger to persons, that the advantages of rubber paving are being increasingly manifested. Americans would do well to give as much earnest consideration as the British to rubber as a road-surfacing material, especially for urban sections where traffic vibration is an ever-growing menace. In its use as a paving material obviously lies also a potential use of rubber even comparable in magnitude to its employment in tires for motor vehicles. It would seem that the inventive genius which is usually ascribed to North Americans is really overlooking a "big bet."

RUBBER CARPETING IS USUALLY URGED FOR ITS GREATER life and comfort as compared with other floor coverings. Its sound-absorbing and efficiency-enhancing qualities, however, are not sufficiently stressed. In a recent room test where din-damping materials, of which rubber carpeting is a salient type, reduced noise 15 per cent, there was a 5 per cent increase in work output with only 75 per cent of the ordinary expenditure of human energy.

What the Rubber Chemists Are Doing

Importance of Temperature and Humidity Control in Rubber Testing

II—Resistance to Abrasion[1]

Extracts from report of the Physical Testing Committee of Division of Rubber Chemistry of the American Chemical Society

IN a previous report of the Physical Testing Committee, *Ind. Eng. Chem.*, 20, 1245 (1928), attention was called to the fact that the temperature of testing has a considerable effect upon the stress-strain relation of rubber compounds and that relative humidity, between the mixing and the curing of the compounds, also affects the stress-strain relation. The committee, therefore, decided to extend the investigation to include the effect of these same variables upon the resistance to abrasion.

Since there is no accepted satisfactory method of determining the resistance to abrasion, it was decided to use two machines which differ quite widely in principle. The machines used in this investigation are the Grasselli abrader, which works upon the Prony brake principle [Williams, *Ind. Eng. Chem.*, 19, 674 (1927)] and gives results in volume loss per horsepower-hour, and the U. S. abrader, which measures the volume loss per hour. These machines were chosen by the committee, not with the belief that the results obtained by their use were a true criterion of the actual wearing qualities of the compounds under service conditions, but to show the differences in results, if any, due to variations in temperature and humidity during the preparation and testing of samples. The four compounds used are numbers 1, 4, and 5, which were used in the investigation of the stress-strain relation, and another compound designated as number 6. This selection provides for study a laboratory test compound, two high-grade tread compounds containing two widely different types of organic accelerators, and a compound which represents a commercial heel compound. Three cures of each compound were tested. The formulas are given in Table I.

Table 1—Test Formulas

Ingredient	Stock 1	Stock 4	Stock 5	Stock 6
Smoked sheets	100	100	100	100
Zinc oxide	5	5	5	12.31
Sulphur	3	3.5	3.5	8.62
Carbon black	..	40	40	43.08
Di-*o*-tolylguanidine	0.75	1.25	..	1.54
Mercaptobenzothiazole	..	..	1.0	..
Stearic acid	..	..	3.0	..
Mineral rubber	..	5.0	..	..
Pine tar	..	2.0	2.0	..
Whole-tire reclaim	..	..	..	278.16
Barytes	..	..	..	123.08
Dixie clay	..	..	..	45.54
Paraffin	..	..	..	3.08

The investigation naturally divides itself into three phases which are:

(1) The study of the four compounds prepared under identical conditions as regards conditioning both in the raw and cured state at 45 per cent relative humidity and 82° F. (27.8° C.) but tested at 15°, 25°, and 35° C.

(2) The study of the compounds conditioned before vulcanization at 10, 40, 70, and 100 per cent relative humidity at 82° F. (27.8° C.) and conditioned cured at 45 per cent relative humidity at 82° F. (27.8° C.) before finally testing at 82° F. (27.8° C.).

(3) The study of the effect of three temperatures 59° F. (15° C.), 82° F. (27.8° C.), and 95° F. (35° C.) while maintaining a relative humidity of 45 per cent during the conditioning of the cured stock previous to testing at 82° F. (28.7° C.).

Remarks

In this investigation study of the effect of humidity during testing was omitted in the belief that during such a short time the humidity could not have an appreciable effect. Furthermore, there is a rise in temperature at the surface being abraded, which would make it very difficult to control the humidity. While the tests were being made, a record of the relative humidity of the cabinet was kept, but this seemed to make no discernible difference in the results. The relative humidity of the cabinet varied over a considerable range (from 18 per cent to 68 per cent) during these tests, but any differences observed varied in direction and, since it is within the range of experimental error, may be ignored.

Conclusions

This study shows that in determining resistance to abrasion the temperature of the room or cabinet should be controlled within ± 1° C. in order to avoid significant errors in the results from this source. Below are shown the percentage differences per degree Centigrade obtained with each of the stocks. It must be remembered that this probably holds only over the range of temperatures studied and might change rapidly outside of this range. As the temperature changes from 15° C. to 35° C., the resistance to abrasion changes per degree Centigrade in the following manner:

Stock	U. S. Abrader Per cent	Grasselli Abrader Per cent
1	+1.25	+1.40
4	+0.40	+0.8
5	+0.60	+0.1
6	—1.8	—0.8

In the light of the present investigation there will be no great error in results caused by differences in relative humidity either with the raw or vulcanized stock. Where laboratories are equipped to condition raw and vulcanized stock for stress-strain tests, it appears that it would be advisable also to condition samples for determining resistance to abrasion. It would at least tend to produce more nearly uniform results by eliminating possible sources of small errors. As the relative humidity during exposure of raw stock increases from 10 per cent to 100 per cent, the resistance to abrasion per 1 per cent relative humidity changes roughly in the following manner:

Stock	U. S. Abrader Per cent	Grasselli Abrader Per cent
1	+0.055	—0.03
4	+0.09	—0.03
5	+0.09	—0.01
6	+0.04	—0.067

As these variations are small compared with the experimental error, it is evident that if the relative humidity does not vary over too wide a range, its effect may be neglected.

The temperature of storing the cured samples while maintaining a constant relative humidity has a negligible effect as in the case of relative humidity. As the temperature increases, the resistance to abrasion per degree changes in the following manner:

Stock	U. S. Abrader Per cent	Grasselli Abrader Per cent
1	+0.125	—0.15
4	—0.3	—0.15
5	—0.4	+0.15
6	—0.025	—0.03

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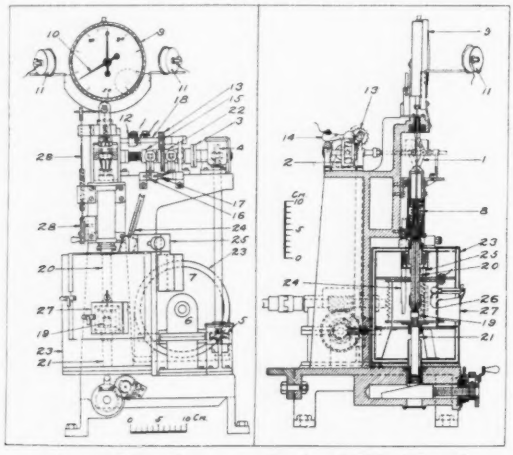
F. E. RUPERT, *Research Associate*

[1] From *Ind. Eng. Chem.*, Analytical Ed., July 15, 1929. Publication approved by the director of the Bureau of Standards of the U. S. Department of Commerce.

Automatic Plastometer

THE following description of a new instrument for studying the plasticity of rubber under molding conditions is abstracted from the author's paper[1]. It was originally intended to make this instrument entirely automatic and autographic. The autographic feature has been eliminated from considerations of practicality. A gage has been substituted, whose reading, however, has been made much simpler.

Referring to the illustrations, toggle joint, 1, is operated through the scotch yoke and eccentric, 2, by a sawtoothed clutch, 3, gears, 4, 5, 6, and a synchronous motor, 7. The gearing is such that the toggle, 1, will go through one-half cycle of operation, from the extreme left to the extreme right positions in 1 second. It is positively driven in both its to and fro motions so that it does not release the force spring, 8, suddenly. The gage, 9, is furnished



Front Elevation Sectional Side Elevation

The Karrer Plastometer

with a friction hand, 10, which retains the maximum position to which the indicating hand moves. The indicating hand may be read at any time after the maximum compression has been accomplished. To facilitate this, a light signal is provided by means of lamps, 11. This signal, flashing every second, is distinctly visible while the indicating hand is being followed in its motion backwards.

The making and breaking of the signal circuit are accomplished by the Ford induction coil contacts, 14, and a hard-rubber cam, 12, whose shaft is geared, 13, to that of the scotch yoke. The engaging and disengaging at the clutch, 3, depends upon the lever, 17, which when depressed, raises a pin out of its groove in a sleeve, 22, and allows the driven half of the clutch to slide into engagement with the driving half. As long as there is engagement, the timing shaft will be rotated by means of the gears, 13. The yoke shaft may or may not be rotated depending upon whether or not the sleeve, 15, is allowed to slide into engagement with the end of the clutch sleeve just mentioned. When the lever, 16, is depressed, such sliding of this sleeve will take place. When the levers, 16 and 17, are depressed momentarily, the scotch yoke shaft will make one-half revolution while the signal shaft, 18, will make one complete revolution.

By prolonged depression of the levers, 16 and 17, any number of revolutions may be allowed—that is, any number of the to and fro motions of the toggle, any number of compressions, and any number of light signals may take place. By momentary depression of the yoke-sleeve lever, 16, and prolonged depression of the clutch-sleeve lever, 17, only one motion of the toggle is allowed, but any number of revolutions of the signal shaft may take place. This means that a sample may be compressed for 1 second and its recovery observed after one or any whole number of seconds.

The gage, 9, is of special design. Its stem, as well as other parts, is hollow. It has only a small hair-spring to take up lost motion. This makes for extreme lightness and a small load upon the sample. The dial of this gage is graduated to 0.001 inch; the extreme travel of the stem is 0.5 inch. To lift gage extension rod, 4, off the sample, the eccentric wheel, 28, bearing against a lifting rod, 29, is provided.

To control the temperature of the sample, 19, the upper and lower plunger, 20, 21, are surrounded by an oven, 23, equipped with thermometer, 24, and thermostat, 25. The samples are inserted and removed through a small door. Illumination within the furnace is provided for by a small lamp, 26, above the small door, 27 and attached to the large door. Only stocks that do not recover completely in 1 second may be studied with this instrument.

[1] By E. Karrer, of The B. F. Goodrich Co., Akron O. Read at the meeting of the Am. Chem. Soc., held in Swampscott, Mass., Sept. 10-15, 1928. Published in *Ind. Eng. Chem.*, Analytical Edition, July 15, 1929.

On the Reduction of Rubber Stress-Strain Determinations[1]

W. B. WIEGAND and H. A. BRAENDLE

FOLLOWING is the authors' abstract of their mathematical study for the development of methods for weighting a small number of tensile breaks of rubber. In this paper the authors seek means of eliminating the personal equation in the selection of rubber stress-strain data.

It became necessary to determine the most probable or true values for tensile strength, elongation, and intermediate values. The authors, therefore, tested a complete inner tube, securing ninety-five breaks, which were then reduced by statistical methods.

Frequency distributions of rubber stress-strain data do not strictly obey the law of accidental error, being negatively skewed for breaking values, and positively skewed for intermediate tensiles.

The true values, therefore, are not the arithmetic means but the modes, which are found to differ from the arithmetic means in every case to an extent greatly exceeding the probable error of such means.

Using these true values, and dividing the ninety-five breaks into successive groups of five, the latter were weighted according to four empirical methods and the results compared with the modal values.

The method of selecting three highest elongations out of five together with corresponding tensiles was found most closely to approach modal values. This method is therefore tentatively advanced as a starting point for the standardized selection of rubber breaks.

[1] *Ind. Eng. Chem.*, Analytical Edition, July 15, 1929.

Rubber Division Invited to Germany

The Executive Committee of the German Society of Rubber Chemists and Engineers has extended to the members of the Rubber Division of the American Chemical Society an invitation to attend its next meeting to be held in Frankfurt-on-the-Main, on June 8 and 9, 1930, in connection with the annual meeting of Verein Deutscher Chemika. This invitation has been accepted by the Executive Committee of the Rubber Division.

The acceptance of this invitation means that the Rubber Division has assumed certain responsibility in the way of contributing to the program and also in being represented by as many members as possible.

William McPherson, President, A. C. S.

Prof. William McPherson, dean of the Department of Chemistry in Ohio State University, will be president of the American Chemical Society for 1930 as a result of a special election, it was announced recently. He was born in Xenia, O., on July 2, 1864. He received his Sc. B. from Ohio State in 1887, and the master's degree in 1890. He took the Ph. D. at the University of Chicago in 1899. Ohio State conferrred upon him the degree of doctor of science in 1895. Prof. McPherson has been a member of the Ohio State chemistry faculty since 1892, rising to a full professorship in 1897 and to the headship of the Graduate School in 1911. He was acting president of the university in 1924. He was a lieutenant-colonel in the Chemical Warfare Service during 1918-19 and adviser to the Trench Warfare Section of the Ordnance Department. He is a fellow of the American Association for the Advancement of Science and a member of the Deutsche Chemische Gesellschaft.

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Halowax Oil

Halowax oil, sp. gr. 1.589, is an excellent solvent for gutta percha and raw and vulcanized rubber. Only small quantities of it are employed for this purpose because of its high cost. The largest users are manufacturers of wire and cable, who have found that the introduction of halowax oil in their process affords a better bond between the rubber insulation and the outer fabric covering. They have found also that a certain percentage of the oil has the desirable effect on the rubber of preventing it from drying out, keeping it soft and resilient, and assures a permanent bond between it and the fabric.

In some instances the oil is compounded with the rubber, while in others the fabric is treated with the oil before being applied to the rubber covering. Halowax oil has exceptional power for penetrating fibrous bodies and in this application a relatively small quantity of it thoroughly covers the cloth.

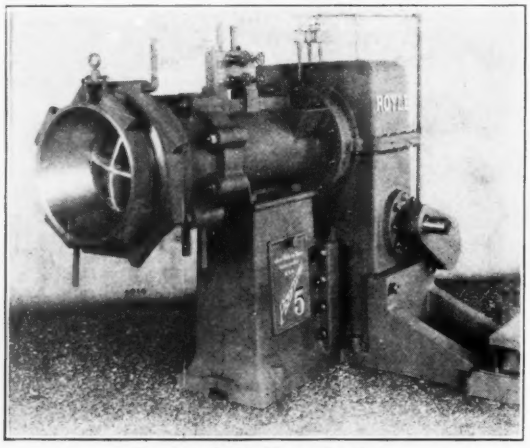
While it is a solvent for rubber, its function as a solvent should not be confused with the action of solvents as ordinarily used in the rubber industry. There is no added solvent liquid in halowax oil which must be removed before vulcanization, for the boiling point of the oil is so high (about 520° F.) that it is not volatilized at the vulcanizing temperature and it therefore remains in combination in the finished work.

When cloth is treated with halowax oil, the action of the oil is to soften the rubber, causing it to penetrate the fiber structure, thus providing a bonding medium between the cloth and rubber.

New Machines and Appliances

Crude Rubber Straining Machine

STRAINING crude rubber, in order to eliminate pieces of metal, wood, stones, and other foreign material, has become increasingly important of late because of the keen competition of rubber manufacturers in the production of better rubber goods.



Royle 8-Inch No. 5 Strainer

Certain products, such as inner tubes, druggists' sundries, and insulated wire in particular, require perfectly clean rubber in order to insure that the finished goods will pass the most rigid inspection and test before distribution to the consumer.

Rubber manufacturers equipped with Perfected tubing machines have taken advantage of the adaptability of these machines by removing the tubing fixtures and inserting straining fittings whereby crude rubber and mixed stocks may be strained. But the trend has been for larger production machines designed to strain crude rubber exclusively.

The accompanying illustration shows the newest type of a machine built for exclusively straining standard plantation rubbers. It is of sturdy construction, weighing approximately 13,900 pounds and occupying floor space of 9 by 9 feet 8 inches. It is driven by a 75 h.p. motor operating at 400 to 1,200 r.p.m. The bed plate of the motor is interchangeable so that the drive may be placed on either side of the machine, thus affording a flexible adjustment to whatever factory space it may occupy.

The worm-wheel drive is the Cleveland No. 800 with a ratio of 29½ to 1, and the thrust is a Timken tapered roller bearing. The 8-inch stock screw is of special design, water cooled, and operates at a speed of 14 to 41 r.p.m. The strainer head, as may be seen in the illustration, is of special construction that facilitates the expansion of the plastic rubber as it extrudes from the head. It is of the 8-bolt type with steam and water circulation to effectively heat or cool the stock as may be required. The screen plate is 16 inches in diameter and provided with 5/16-inch holes. Twenty and thirty-five-inch mesh screens are usually furnished with this head, though any other mesh desired may be used. The parts in the head section are arranged to permit quick changing with minimum effort on the part of the operator.

The estimated capacity of this special straining machine is 2,000 pounds of plantation rubber per hour, passing through a 35-mesh screen. The rubber is taken from the cases and broken down on a standard mill until the lumps are removed and the rubber becomes massed when it is fed into the strainer hopper.

Due to the special construction of the stock screw and the strainer head, combined with the thrust of the powerful drive, the rubber in passing through the machine is extruded in a broken-down plastic condition favorable for receiving the pigments. It may be fed directly to the Banbury or mixing mills for the incorporation of the compounding ingredients.

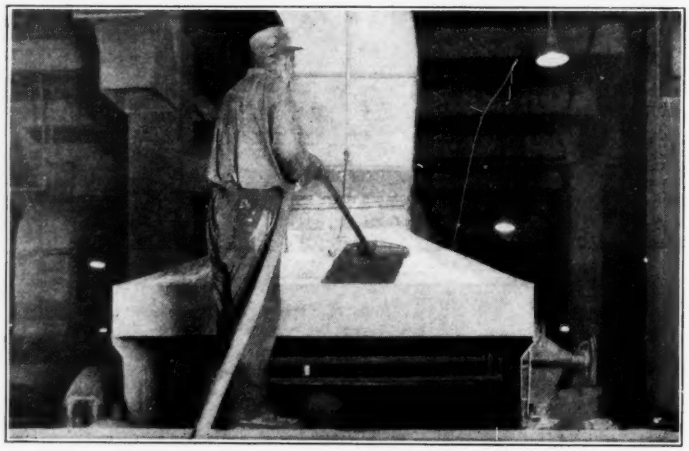
Hard or soft conditions of plasticity can be given to the rubber in passing through the strainer by the use of fine or coarse screens. Rubber for footwear compounding requires to be soft; therefore, a fine screen is necessary. To obtain the desired consistency in rubber for inner tubes, a coarser screen is used. It is the mesh of the screen that determines the maximum hardness or softness of the extruded rubber. John Royle & Sons, Paterson, N. J.

Factory Cleaning System

EVERY industrial plant of necessity has a sweeping or cleaning problem whether brought about by dust producing operations or otherwise. The power cleaning system here referred to is installed in many power and industrial plants among which are a number of the leading tire and mechanical rubber goods factories.

The method employed is similar in principle to the well-known vacuum cleaner but is of much greater power and capacity. The system comprises portable and stationary types, according to the requirements of the service. For industrial work heavy duty portable sweepers are made in 2 to 10 h.p. sizes, while the stationary systems range from 5 to 40 h.p.

The primary elements in the Tabco cleaning system consist only of four parts: namely, the vacuum producer; the dust separators; the conduit, comprising hose and piping; and the suction nozzles. The



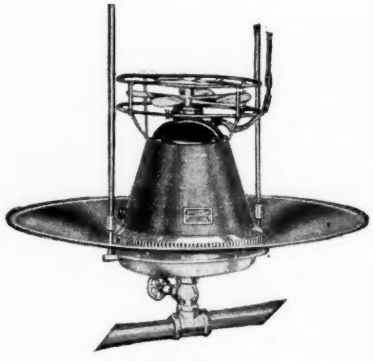
Removing Soapstone Dust from Mill Hood

vacuum producer is unique in design and construction in that it has one working part and no wearing parts. The working part is simply a heavy steel shaft with rigidly mounted aluminum alloy impellers cast in one piece.

The dust separators are extremely simple in design and construction. They have no internal wearing parts and require practically no attention other than occasional emptying of the collected dust. They filter the air and separate 99½ per cent of its suspended dust before the air passes through into the exhauster.

The conduit or piping system is installed by the purchaser of the equipment following plans and specifications determined for each installation by Tabco engineers.

The cleaning nozzles are designed for the particular class of work to be done and are substantially made with convenient hinged and swivel joints. There are special



Standard Humidifier

nozzles for floor sweeping, wall cleaning, and other interior services.

A cleaning system of this sort is especially desirable in rubber plants, particularly in mixing rooms and places where soapstone floats in the air and settles to the detriment of the health of the worker and the impairment of the quality of the product. Allen & Billmyre Co., Inc., Grand Central Palace, New York, N. Y.

Humidifier

OPERATORS of spreading machines for rubberizing or weatherproofing fabrics for raincoats and other purposes are familiar with the fire risk involved by the presence of static electricity. To obviate this danger, steam is often allowed to escape against the fabric in the immediate vicinity of the point of application of the rubber. It is equally desirable to humidify the surrounding atmosphere of the room.

For this purpose the humidifier here pictured is very effective. This is a unit of high atomizing capacity, which spreads its vapor uniformly over a great area. It is very economical to operate and maintain. Under normal working conditions each unit will atomize 30 pounds or 3½ gallons of water per hour and requires only 150 watts maximum load or 1/5 h.p. to operate. In each unit there are only two moving parts, the fan and atomizing disk; both of these are carried directly on the motor shaft. This eliminates all bearings except the two ball-bearings in the motor. One greasing of these suffices for 3,000 hours of service.

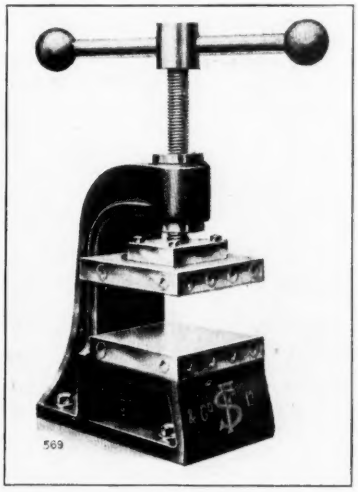
The fan has a large air-handling capacity, controlled in direction for maximum air cleaning and even distribution of water vapor. All working parts lift out of the basin, leaving it exposed for cleaning. A removable dirt filter is provided, which makes cleaning a simple operation. Water is supplied to the unit by gravity through a two-compartment float tank so constructed that it is impossible to flood the units. This method eliminates all pumps, waste water return piping, compressors, filters, or other auxiliary equipment. There is absolutely no waste water as all water that enters the unit is atomized.

In textile mills and fabric stock rooms such as are found in rubber plants, groups of humidifiers are desirable. Their operation may be controlled automatically by an electrical device adjustable to any setting, maintaining the humidity within two per cent. When the control is off, there is no waste of power as the units are automatically stopped. The Standard Engineering Works, Pawtucket, R. I.

Hand-Screw Press For Small Mold Work

ALMOST convenient and useful hand-screw vulcanizing press is here pictured. It is suitable for laboratory and experimental cures in trying single molds or the production of small special orders without interference with regular factory production.

The press consists of a one-piece casting boxed at the base and rising with side flanges at the back to support the top plate



Laboratory Vulcanizing Press

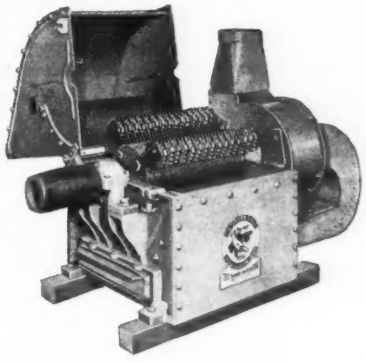
and hand-screw. The latter operates by a counter-balanced hand-lever and threads through a fitting or box and connects in a plate bolted to the top platen.

Both platens or steam chests are of cast-steel, 12 inches square, and can be used for working pressures up to 200 pounds per square inch. The press is thus adapted for vulcanizations at all temperatures.

Provision is made in the base of the press for attaching it securely to a heavy bench or other suitable support that will bring the handle-bar of the screw to a level convenient for the operator. Francis Shaw & Co., Ltd., Bradford, Manchester, England.

Hard Rubber Scrap Grinder

THE makers of the machine here illustrated claim that it is effective for grinding any grindable material from feathers to hard rubber, though what useful purpose ground feathers may serve is a question. A feature of the grinder is



Jay Bee Hammer Grinder

that no metal touches metal, the grinding being accomplished by the hammers striking the material only. There are no knives, gears, burrs, rolls, nor plates in this grinder, thus friction or lost work is practically eliminated.

The hammers in the machine are as nearly indestructible as is possible to build them. They are made of special steel, heat treated, and have a glass-hard wearing surface with a tough core or center. The sixteen cutting-edge hammers are double-hinged and insure greater wearing qualities as each edge does its share of the work.

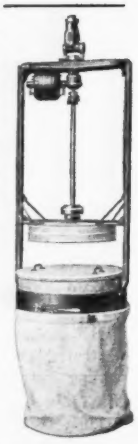
The double-hinge feature serves two purposes: it prevents damage when foreign articles get into the mill, and renders available all of the sixteen cutting edges. The hammers are separated by adjustable disks. Each disk has three sets of holes to permit changing the distance between the hammer and the screen to suit the material being ground.

The hammers are set originally in the middle hole when the mill leaves the factory. This is found best for grinding most materials. When light, fluffy materials are to be ground, the outer holes are sometimes used.

It is said that this hammer mill is much superior to any burr or attrition mill and will grind faster and at less cost. J. B. Sedberry, Inc., Utica, N. Y.

Batch Sifter

IN the manufacture of fine quality rubber goods and articles for special service, sifting the compounding ingredients previous to milling them into the gum components of the stock is the recommended practice. This precaution will eliminate much trouble and loss in the long run.



Gyratory Sifter

The accompanying illustration shows an electrically driven gyratory sifter for sifting all powdered ingredients used in the compounding of rubber. This sifter is rapidly displacing old-style bolting reels and reciprocating motion sifters. A square foot of sieve surface on this machine has more than six times the efficiency and capacity of the same surface on a round or hexagon bolting reel without beaters, and more than twice the efficiency of a reciprocating motion or any other motion sifter of equivalent surface.

The machine is driven from an ordinary electric-lamp socket and costs less than one cent per hour for current. It requires less than one square yard of floor space for operation and is dustproof and noiseless. The sieve can be removed, cleaned, and replaced in less than one minute, or a different sieve mesh can be installed in the same time.

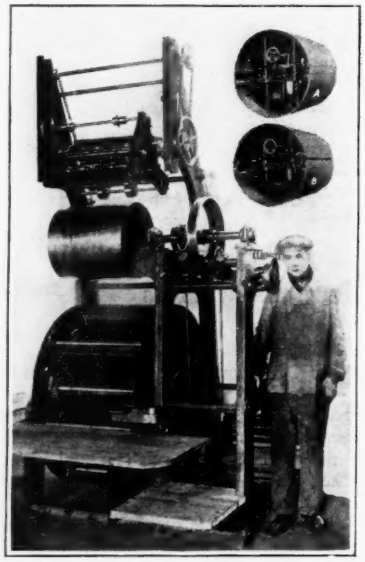
No brush or artificial pressure is used to force the materials through the sieve and it is possible to secure a finer sifting result than is possible with other types of machines that use brushes or pressure. The sieve cloth is only 24 inches in diameter and, therefore, the cost of replacing it is negligible, and, again, the fact that no brush or other pressure is used means much longer life for the wire or silk screen. Furthermore, the 2½-inch circle of gyration is particularly effective when several ingredients are sifted and mixed at the same time, and gives a well blended product. Great Western Mfg. Co., Leavenworth, Kan.

Flat-Band Tire Builder

A MACHINE of French origin designed for building flat-band tires is pictured in the illustration. At its base is located a revolving drum or rack for holding rolls of fabric of different widths with cords laid at suitable angles for correct ply construction. The stock turret is power driven, and the operator, by movement of a lever, automatically brings to position the stock as wanted. Over the rack is placed the building drum shown in the insert, *A* being the working position, while *B* represents the drum in collapsed position for removal of the finished tire or casing.

Opening and closing the drum is effected by movement of the hand-wheel which actuates the toggle levers at each side and forces to place the diametrically opposite wedge-shaped sections, which raise the two-part cylinder sides of the drum on the internal sliding guides and thus give full cylindrical form to the drum, ready for building the tire band. Reversing the motion of the hand-wheel withdraws the movable sections and draws the larger ones inward into a contracted position away from the tire band which is then easily removed.

Referring again to the machine proper, there is supported over the building drum a second revolving apparatus carrying all the necessary tools for building nearly automatically tire bands of any construction, beaded edges, wired on or straight sides. There is also an automatic device for applying the rubber parts, sidewall, and treads.



Gautier Flat-Band Tire Machine. Insert —A. Building Drum Expanded; B. Building Drum Collapsed.

The machine is provided with marking rollers. Only one operator is necessary to handle the machine and there is no need for him to move around the machine as the stock, tools, and operating attachments are all within convenient reach.—C. M. Gautier & Cie., 252 Rue du Landy, Saint-Denis, Seine, France.

Machine for Grinding and Surfacing Rubber Goods

IN mechanical rubber goods factories manufacturing floor tiling or slab rubber to specified thicknesses and finish, a grinding machine capable of doing wide work to close dimensions is a necessity. Hand sanding cannot take its place.

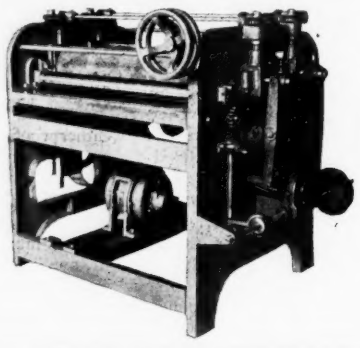
The machine illustrated is designed to take slabs of rubber to 36 inches wide and up to ½-inch in thickness. It is capable of grinding 1/32-inch off the slab and surfacing it to even thickness within a few thousandths, depending upon the nature of the rubber. The machine is equipped with two surfacing rolls; one roll is covered with sand-paper and arranged with a clamping device for tightening and holding the sand-paper firmly to the roll. The second consists of a brush roll.

For special work the machine can be arranged with two abrasive rolls, one coarse and one fine, or it can be arranged to have one roll a grinding roll and the second a buffing roll. These two rolls are driven by a belt drive to the main drive shaft.

Brackets on the base support the motor, which is directly geared to the drive shaft. A 3 h.p. motor operates the machine. Three pairs of feed rolls are driven by a sprocket and chain from the worm gear, which is driven by the worm shaft. This in turn is driven by a friction disk drive from the main drive shaft. The friction drum is adjustable on the disk to get any speed desired on the feed rolls and also to run the feed rolls in either direction.

The motor should be arranged with a reverse control so that if the material is too thick for the adjustment of the grinding roll, the machine may be reversed and the material backed out. The rolls are adjusted for thickness of the material by hand-wheels at the front of the machine. Each roll is adjusted separately through worm gears which operate the adjusting screw on the bearing boxes. The gearing is such that the adjustment can be made very fine and the rolls set to a few thousandths of the thickness of the slab required.

The grinding rolls are given an oscillating motion of ¾-inch by eccentric cranks operated from the eccentric shaft connected through worm gears to the drive shaft. The roll revolves at 1,000 r.p.m. and oscillating ¾-inch, it is able to give a very even surface to the material. The second roll can be furnished as an abrasive roll, brushing roll, or buffing roll. It has a speed of 1,600 r.p.m. and likewise an oscillating movement of ¾-inch. The top of the machine can be conveniently hooded for a suction blower to remove the grindings.



Standard Rubber Grinder and Surfacer

The machine is so designed that it can be equipped for grinding almost any material that is used in slab form and is rigid enough to be fed through the machine by means of feed rollers. The Standard Machinery Co., Mystic, Conn.

Rubber Factory Topics

Artistic Designs for Rubberized Fabrics

RUBBERIZED fabrics are embossed, printed, stained, or decorated in numerous ways. The various processes may include slow and tedious hand painting, or involve the use of printing rollers which are capable of running yard after yard of fantastically colored designs as easy as wallpaper is printed with the varied colors of the rainbow. Some of the old designs

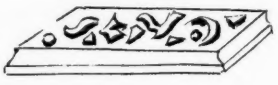


Fig. 1.—The Old Hand Block Is Not Much Used Now for Making Printed Effects on Rubber.

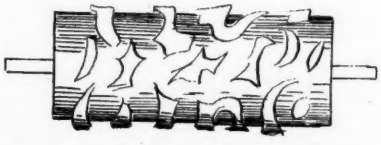


Fig. 2.—In Surface Printing on Rubber the Pattern Is Raised above the Roller.

Fig. 3.—The Pattern May Be Engraved Intaglio Fashion.

which long ago went out of use are now in style for rubber-surfaced garments, rubber-surfaced material for awnings, porch furniture, and numerous other fabrics destined to keep out water and at the same time present an attractive appearance.

Quite a problem in colors and ornaments is therefore in effect for the dyers, the stainers, the painters, the printers, and the other artisans who try to keep up with the demands of the trade for richly designed and colored stuffs in which rubber forms a part. Vat printing and rotary-plate printing are as old as hand-block printing of rubber-surfaced materials, but the processes are more scientifically performed now.

Long ago the writer was employed in a large eastern print works in which millions of yards of calico were produced annually. Some of the fancy printing on calicoes was done with hand blocks, similar to the one shown in Figure 1. Surface printing on rubber surfaces or any surface of a similar nature, is now mostly done by means of engraved rolls, one of which is shown in Figure 2. It will be noticed that the parts which are intended to produce the pattern are raised. This is surface printing, and as many individual rolls are needed to produce the pattern as there are colors in the pattern. Another form of surface printing on rubber sheets, rubber fabrics, or rubber in a surfaced form, which is also technically termed surface printing, is produced with rollers in which the patterns are engraved into the copper, intaglio fashion, as shown in Figure 3. Here the pattern part is below the surface of the roller instead of above it as in Figure 2. It is the old copper-plate method of printing on a smooth surface by means of rotary devices in lieu of flat ones. The intaglio roll, like the roll of any other type of rotary print on rubber, must have its accompanying roll or rollers, each with its particular part of the design in its polished surface to produce an additional color or colors.

Not long ago the writer saw some very attractive printing produced on rubber sheets intended for upholstery purposes, by means of engraved hardwood rollers. It is easier to work wood than metal, and therefore cheaper, although the rollers will not last so long, nor will the outlines be so clear as when made of metal. The rollers were hardwood with a copper ribbon driven in edgewise as a border or as an edging to the forms. Then the spaces within the copper ribbon work were filled in with felt, as felt has a great affinity for color and is capable of carrying any mixture for considerable time, besides discharging enough of it on the traveling sheet or rubber to produce the design.

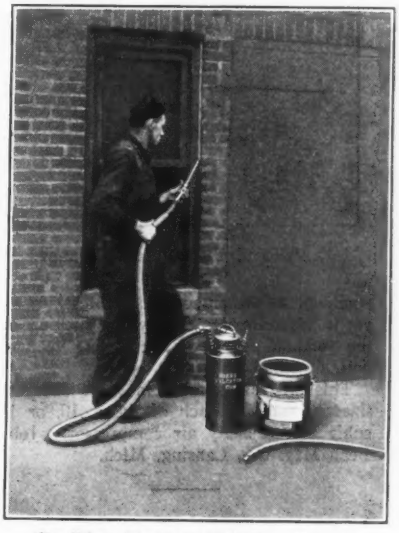
The color is a rather heavily charged paste of the right hue, and its mission is to become embedded into the felt, which is between the interstices of the copper lines, and deposit this hue upon the passing rubber surface with each impression. In order to keep up the supply of color to the felt, the roll touches a color-supply fountain.

The colors of designs thus impressed upon the surfaces of rubberized fabrics or similar textures are usually bright and have a good tone. But, of course, they cannot be regarded so fast as the colors which are dyed direct into the loose stock. The fadeometer will weaken the printed colors sooner than the stock-dyed colors, as all dyers know. A first-class fadeometer will change the color on rubber, wood, textile fabric, or metal after an hour's exposure under favorable conditions, and yet these same colors in normal service will not be faded in months. A rug buyer who had contracted for a number of bales of rubberized rugs canceled the agreement when his fadeometer caused the colors in a few of the rugs to fade out to some extent. The chances are that those rugs never would have been exposed to the strong action of any fading agency like a fadeometer.

Sealing Open Joints in Factory Window-Frames

THE necessity of sealing all open joints in buildings is recognized. It is claimed that 90 per cent of the leakages from the exterior of a building to the inner walls is caused by improperly pointed joints. Not only does cold air and water enter such open joints but dust as well. The latter is especially damaging in a rubber factory to stocks in process of preparation, being made into goods, or even in storage. For the exclusion of wind-blown dust, if for no other reason, the joints of factory window-casings, skylights, and flashings should be thoroughly pointed.

A rubber-like elastic and waterproof material, known as Vulcatex, made from China wood oil is being used for packing building joints around window-frames and other places. This composition adheres tenaciously to any surface and because of its elastic and rubber-like quality it will expand and contract within the usual temperature range sufficiently to maintain a watertight joint.



Caulking Factory Window-Frames

A special contrivance, known as a power gun, has been perfected for applying this elastic cement. It is simply a strong screw-top, pressure-proof can for containing the cement, and provided with pressure-inlet and cement-outlet fittings. A delivery hose and nozzle with stop-cock are attached at the outlet. Pressure is applied to the apparatus from a cylinder of liquid carbon dioxide through a pressure-reducing valve. The outfit is tested to 300 pounds' pressure per square inch.

New Goods and Specialties

Bean Air Vac

MANY service men have use for vacuum cleaners that have power enough to do a good job of cleaning, yet they do not feel justified in making an expenditure of several hundred dollars for an outfit which perhaps will be used only a small portion of the time. Consequently, this Bean Air Vac which operates on any air line, with a capacity of 5 cubic feet per minute or over, will be welcomed and will fill the long-felt need.

This air vac sells at a very low price and comes completely equipped with enough hose to enable the operator to attach it to his air line and reach the object to be cleaned.

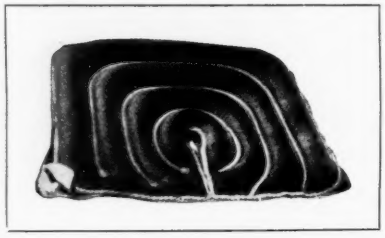
The idea of converting the ordinary air-compressor air into an air vac is unique and yet very sound in purpose. The air comes in from the nozzle and is reversed, creating the vacuum which is directly proportional to the amount of air discharged, yet it approximates closely the sucking or the vacuum power of a complete vacuum unit.

Novel and Economical Cleaner

This air vac is made in three different sizes: a size for each of the 5, 10, or 15 cubic feet capacity air compressors. John Bean Mfg. Co., Lansing, Mich.

New Airubber Accessory Designed for Sport Fans

SPORT followers who have been inconvenienced by uncomfortable seats while watching their favorite pastime will heartily welcome this new Airubber cushion designed especially for sport uses. The cushion is intended for boating and canoeing, camping and picnicking, and use in a cabin, on the lawn, or at the beach. It affords comfort and protection to spectators at outdoor games as well as indoor matches. It is an excellent accessory for hiking, skiing, snowshoeing, and skating.



Sport Cushion

The cushion is made of Airubber special light-weight khaki jean, rubber coated inside, and vulcanized in one piece by the Airubber patented high-pressure process. No cement or patching is used; even the valve is vulcanized in. Inflated, the cushion measures 18 by 13 inches. It weighs only 10 ounces. Folded, it is as easily carried in a coat pocket as a pair of leather covered mittens. There are two models: plain khaki jean, or with corduroy face—blue, chestnut, golden brown, or auto-smoke grey. New York Rubber Corp., Beacon, N. Y.

Foot Comfort at the Beach

THE old-style heelless bathing slipper proved to be rather fatiguing, especially to those women who were used to high-heeled shoes for daily wear. To overcome this inconvenience, the I. B. Kleinert Rubber Co., 485 Fifth Ave., New York, N. Y., now markets bathing slippers in the latest colors, with three different heel heights.

The "Mermaid" is a one-strap shoe with a low heel. The rubber uppers are embossed with artistic designs in a wide range of colors. This shape has very snug fittings with a ribbed edge which prevents sand and small pebbles getting into the shoe.

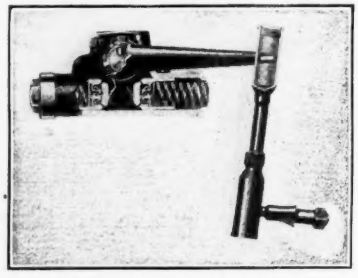
The second model, with the medium heel, is fashioned after the popular sport oxfords. It, too, is snug fitting, with attractive designs.

New Bathing Footwear

The high-heel model, "Kaigan," which contains arch supports, is a hand-made lasted shoe. It also has a single strap across the instep, which aids in holding the slipper snugly on the foot. The attractive designs add to the charm of these dainty shoes. These slippers all have the appearance of a smart promenade shoe and will appeal to the most fastidious woman.

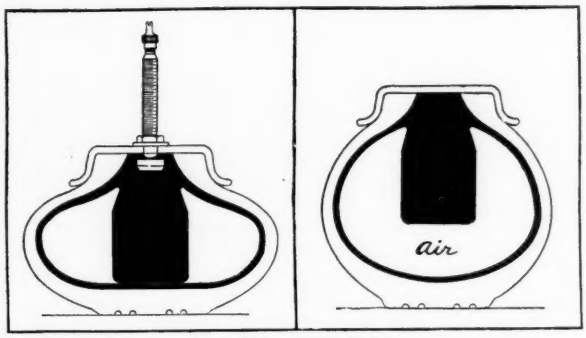
Rubber in New Two-Way Hydraulic Shock Absorber

AFTER more than eighteen months of research and experimental and test work, the Monroe Auto Equipment Co., Monroe, Mich., announces a new two-way hydraulic shock absorber, which utilizes rubber. The announcement was made by Charles S. McIntyre, president, who declared that the mechanism and operation of the new device sets an entirely new high standard of engineering practice and design in this field, making a notable advanced development in hydraulic spring control.



Monroe Hydraulic Shock Eliminator

An exceptional degree of riding comfort is obtained since the spring-rebound and the compression are both cushioned by means of a separate piston and valve opening in a single chamber. This type of engineering reduces the sudden jolting in recoil. Connector joints are ball and socket type, rubber insulated, noiseless, and entirely free from necessity of lubrication. Other advantages claimed for this shock eliminator are: Its two-way action governs the springs at all times, making for easy riding. The automatic valve control eliminates adjustments for temperature changes. The rubber-insulated connecting rod joints require no lubrication and will not rattle. The oversize oil reservoir capacity makes frequent filling unnecessary. Because its pistons displace more oil than other hydraulic shock absorbers, they dissipate a greater amount of energy, wear less, and absorb more shock.



Ever-Safe Inner Tube

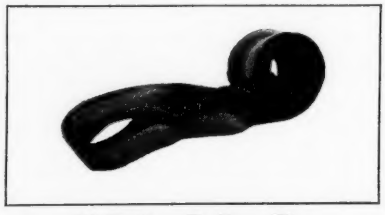
Cushioned Inner Tubes

WHEN a tire goes flat, it usually results in loss of temper and tardy engagements, unless, of course, the tire has an Ever-Safe inner tube. This inner tube is absolutely unique, for it permits driving on a flat at a reasonable rate of speed without injuring tire or tube. With this equipment when riding on a flat tire, you do not ride the valve stem, and the tube does not creep. The casing or tube cannot double up and no injury can occur to sidewalls. The flat tire, consequently, may be changed when most convenient.

As shown in the illustration, the rubber cushion, on which you ride only after the puncture, goes around the inner circumference of the tube and is part of it. The tube is inflated to the same air pressure as any other pneumatic inner tube, insuring all of the resiliency expected of a balloon tire. When necessary, the cushion may be recovered with another tube. This tube can be used with any make of balloon tires. Ever Safe Patents Corp., San Francisco, Calif.

New Endless Flap by Fisk

AN all-rubber endless flap has been designed by The Fisk Tire Co., Inc., Chicopee Falls, Mass., to replace fabric flaps used in certain types of tires. The new flaps will be furnished as original equipment with the Fisk Rugged DeLuxe tires.



All-Rubber Endless Flap

The new endless flap, because of its elastic construction, conforms to the interior shape of the casing as well as the outside contours of the tube, overcoming trouble caused by wrinkles in ordinary flaps. This flap is tough as well as pliable, which make for long wear. It is tubed to correct thickness and sized to shape, making it glove-fitting when properly assembled. Perfect fit eliminates likelihood of shifting. Because of the texture the new Fisk endless flap does not shrink but stretches and conforms to the shape of the tube surface when it is depressed or expanded.

All-Rubber Elbow Shooting Pad Aids Riflemen

FROM England comes another all-rubber device to aid shooters. This is the "Clincher" elbow shooting pad shown in the accompanying illustration. The pad is molded to shape to fit the elbow perfectly, for it is self-adjusting. It not only protects the elbows from the damp, but also eases the arm and saves the cloth. It makes possible a secure grip on any surface.

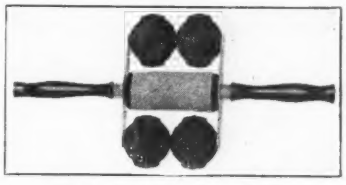
"Clincher" Shooting Pad

The manufacturer, The North British Rubber Co., Ltd., 204 Tottenham Court Road, London, W.1, England, states that this shooting pad has been admitted for use by the National Rifle Association and The Society of Miniature Rifle Clubs.

That Pound of Flesh

IN Turkey fat women are considered beautiful. But, alas, many such women do not live in the Near East. For those women who have graduated, albeit reluctantly, into the class of "stylish stouts" and even for those men who are victims of an abundance of avoirdupois, the Miracle Health Builder has decided possibilities. It is a means of reducing without diet or drugs. Its method is to oxidize excess fat by massage. It is also claimed to be a health exerciser.

The Miracle Health Builder is a substantially built device with four rubber-ball rollers and a center roller with an alcohol pad. It gives an alcohol massage, stimulates circulation, and reduces fat-in-spots all at once. Miracle Laboratories, 64 W. 23rd St., New York, N. Y.



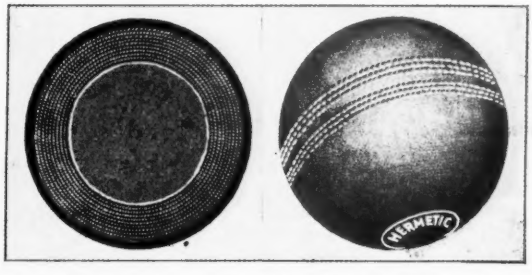
Miracle Health Builder

Molded Rubber Cricket Ball Comes from England

CRICKET is the favorite sport of Britishers, and is slowly but surely gaining in popularity with Americans. The quality of the ball used is an important factor. The Hermetic cricket ball of molded rubber is an improvement over the leather ball. The former is specially molded to correct regulation size and weight and normal resiliency.

The manufacturer claims the ball has many exceptional qualifications. It has no sting and does not damage the bat. An ideal surface grip is provided for the bowler. Wet or moisture cannot penetrate through the ball whose weight never varies. It never loses its shape and withstands the roughest usage without chipping. It gives three times the life service of a leather ball because the rubber ball is practically indestructible.

This ball is also supplied for hockey in best white finish. Hermetic Rubber Co., Ltd., Ryland St., Birmingham, England.



Cross-Section and Cover of the Hermetic Cricket Ball

Industry and Trade

Report of the National Industrial Conference Board

THE output of 517,792 cars, trucks, and busses during July established a new July record in the automobile industry. July production decreased seasonally 8.6 per cent from June, but compared with July a year ago, there was an increase of 24.0 per cent. The production for the first seven months of this year, 3,929,186 units, is an increase of 43.2 per cent over the same period last year, and the largest for any similar seven months. The number of new car registrations for the calendar year to July 1 represents an increase of 41.0 per cent over 1928, and foreign sales in the first 6 months of this year increased 55 per cent when compared with the same period last year.

Crude Rubber

July crude rubber consumption is estimated at 41,525 long tons, according to the Rubber Manufacturers Association. This compares with 43,228 long tons for June, and 37,407 long tons for July, 1928. Consumption of crude rubber for the first seven months of this year is estimated at 310,834 long tons as compared with 248,972 long tons a year ago. Crude rubber imports for July totaled 44,252 tons as compared with 44,490 long tons in June and 33,382 long tons in July, 1928. For the seven months ended July 31 total imports amounted to 362,759 long tons as against imports of 245,879 long tons for the corresponding period of last year. Domestic stocks of crude rubber on July 31 were 95,536 long tons compared with 92,062 long tons on June 30 and 83,242 long tons on July 31, 1928. Crude rubber afloat for United States ports on July 31 was estimated at 38,859 long tons as against 46,036 long tons on June 30th.

Consumption of raw cotton during July was the heaviest of any July in recent years except 1927, and the consumption for the cotton year just ended was also the highest for any recent year excepting 1926-1927, a year of very low-priced cotton. July consumption was the lowest in the present calendar year, which is a natural trend in cotton manufacturing, the summer months always experiencing a slackening in running time.

Stocks of gasoline in the United States on July 1 were 41,461,000 barrels, a decrease of 7.1 per cent from the preceding month, and a decrease of 18.9 per cent from the same date last year, but 23.9 per cent more than on the first day of this year. However, consumption has been increasing. June this year increased 14.4 per cent over June last year, and consumption of gasoline for the first six months of 1929, compared with the same period of 1928, shows an increase of 16.5 per cent.

Merchandise Sales

Sales by department stores in July were 2.7 per cent greater than the corresponding month last year, but reduced to a daily average, there was a decrease of about one per cent. The greatest gain, 5.5 per cent, was in the St. Louis district, and the greatest loss, 3.7 per cent, in the Minneapolis district. Chain-store sales continued to expand, 47 reporting an average gain of 27.7 per cent over June and an average gain of 25.0 per cent in the first seven months of this year compared with last.

The production of bituminous coal for the four weeks preceding July 27 amounted to 35,528,000 net tons. This compares with a production of the corresponding weeks of 1928 of 33,046,000. The increase, amounting to 7.5 per cent, was less marked than that shown in the production of the four weeks in June compared with 1928.

With an improved building situation, and an agricultural purchasing power about equal to last year, it seems reasonable to believe that, outside of a small seasonable decline, industrial and trade activity should continue close to the present high rates for some time.

American Cotton Consumption for Tire Fabric

THE United States of America stands first in both production and consumption of cotton. About 55 per cent of the world supply of cotton is produced in the United States, and about 25 per cent of the total world production is consumed in its mills.

Changes in styles, abandoned uses, new uses, etc., are reflected in the changing current requirements of the various qualities of cotton and they thus affect the producer. The value of facts of this kind, at this time, when new textile fibers and improved processes of manufacture are being reported, and when the spinning industry is endeavoring to find ways and means of cutting manufacturing costs, is illustrated by the development of the tire industry during the past few years.

According to the Bureau of the Census, as reported in Department of Commerce Bulletin 150, the manufacturers of tires formerly used extra long staple cottons; they now use shorter staple lengths because of increased knowledge of fabric requirements and of improved methods of making tires, as more fully set forth in the INDIA RUBBER WORLD for September 1, 1922. The results of these studies, however, would indicate that manufacturers of automobile tires still use very good cotton which averages well above one inch in staple length.

During the past two years, in spite of the depressed condition of the American spinning industry, cotton consumption has been the largest known.

A quality classification of the cotton consumed in the various industries would show whether one kind of cotton or another is having a healthy demand. The industries considered in the survey actually took the products manufactured from about 1,150,000 bales of cotton during the cotton year ending July 31, 1928. The cotton was not necessarily all spun during that same year.

NOTE.—Data taken from "Quality of the Cotton Spun in the United States (Year Ending July 31, 1928)," U. S. Dept. of Agriculture, Division of Cotton Marketing.

The following table shows the number of pounds of tire fabric used during the seven-year period ending July 31, 1928, according to estimates made by the Rubber Manufacturers Association.

Estimated Number of Pounds of Cotton Fabrics Consumed by Tire Companies During Specified Cotton Years Ending July 31[1].

Year	Fabric Consumed—1,000 Pounds	Fabric Consumed—Per Cent of 1922
1922	134,270	100
1923	169,952	126
1924	158,397	117
1925	220,888	164
1926	215,688	160
1927	239,166	178
1928	264,708	196

[1]Estimates by Rubber Manufacturers Association.

It is evident that the consumption of cotton by the tire industry has practically doubled since 1922. The full significance of those figures appears only when it is realized that the fabric consumed in this industry alone for the year ending July 31, 1928, represents about 622,000 bales of raw cotton including approximately 120,000 bales of imported cotton. Of these 622,000 bales, about 68,000 represent cotton $\frac{7}{8}$ to $\frac{15}{16}$ of an inch in staple length; the remaining 554,000 bales were of cotton 1 inch or longer in staple. American cotton consumed in the manufacture of tire fabric is usually Middling or better in grade and of U. S. standard staple lengths, 1, $1\frac{1}{32}$, and $1\frac{1}{16}$ inches, with a small quantity of $1\frac{1}{8}$ and longer.

The magnitude of the demand for cotton by the entire rubber-goods industry can be appreciated in view of the fact that the Rubber Manufacturers Association estimates that the above figures represent only 70 per cent of the cotton used by the industry. In other words, in 1928 about 266,000 bales were manufactured into various fabrics which are used in rubberized goods other than tires.

Editor's Book Table

New Publications

"Gastex Carbon," a new type of reenforcing carbon manufactured from natural gas by an improved process, is fully described in a 15-page booklet issued by General Atlas Chemical Co., 60 Wall St., New York, N. Y. This little book contains valuable data regarding the methods of using Gastex in various types of rubber compounds.

The Cleveland Liner & Mfg. Co., 5598 Maurice Ave., Cleveland, O., has issued a new blotter of typical blue color for advertising purposes, bearing the company trade-mark, 'Climco." The current slogan is "The best man-understanders make the best managers."

"Fittings for Fipe Structures" issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is a catalog of fittings for pipe structural work, with illustrations of special unit parts covering all standard fittings. Such fittings are used in the construction of panel mounting brackets, floor and wall braces, fixed and adjustable combinations of braces for many purposes and locations.

"Textile Printing Machinery" is Catalog No. 251 of Rice, Barton & Fales, Inc., Worcester, Mass., comprising complete illustrated descriptions of printing machines built for printing textiles in single and many colors in one passage through the machine. Certain of the simpler machines are employed for printing rubberized fabrics as, for example, to simulate plaid linings on rubberized raincoat fabrics.

"The Duplex System for Conveying Materials" issued by the Boston Woven Hose & Rubber Co., Cambridge, Mass., is a brief treatise on the system covered by U. S. Patent No. 1,626,041, which provides two separate operating units, one a power transmitting belt and the other a wider sheet to take the wear and protect the power belt from abrasion.

"The 'Automatic' Chuck for Drums" is the title of a four-page circular illustrated in color and describing the three-in-one chuck made by the National Rubber Machinery Co., DeMattia Division, Clifton, N. J.

Book Reviews

"On the Gutta-Percha-Like Substance Obtained from Tu-Chung." By S. Minatoya and K. Ishiguro. Electro-Technical Laboratory, Ministry of Communications, Japan, 1929. Paper, 7 by 10 inches, 16 pages. Illustrated. Charts and tables.

This publication, in Japanese, is No. 260 of the researches of the Electro-Technical Laboratory, Kiyoshi Takatsu, director. The Japanese text is preceded by a synopsis in English. The authors give the results of their experiments carried out on the gutta-like substance from the tu-chung tree with the view to apply it to the insulating material for submarine communication cables. This study relates principally to the chemical structure and physical properties of the substance. The authors conclude from their tests that this hydrocarbon should be comparable with the gutta hydrocarbon for the purpose of insulation for submarine communication cables.

"Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry." Vol. III. 1928. Society of Chemical House, 46 Finsbury Square, London, E. C. 2. Cloth, 741 pages, 5½ by 8 inches. Indexed.

This yearly volume of reports summarizes the advances and discoveries made in various branches of technology. The chapter on rubber occupies 21 pages by D. W. Twiss, who cites as the feature of greatest popular interest in the rubber industry during 1928 the sudden decision of the British Government to end the Stevenson Scheme for restriction of the output of rubber from British plantations.

The following topics are discussed concisely with copious references to their scientific and technical developments: rubber planting; latex; raw rubber; vulcanization; compounding ingredients; rubber treatment and applications; and testing.

The reports and references contained in this publication are invaluable for chemists as they are summarized by specialists in each field of chemical technology.

"Summary of Current Literature." Vol. VII, No. 5. Research Association of British Rubber Manufacturers, Information Bureau, 105 Lansdowne Road, Croydon, England. Paper, 64 pages, 7¼ by 9¾ inches.

This is a typical number of the summary of current literature issued each month to provide the members of The Research Association of British Rubber Manufacturers and subscribers with the recorded developments in connection with materials, products, and processes. This publication covers every phase of the rubber industry from the production of the raw material to its many and varied applications in service. It includes reference to, or an abstract from every article of importance dealing with rubber, which has appeared in the technical and scientific press during the preceding month.

The summary is accepted by progressive manufacturers in Great Britain as practically indispensable as a means of keeping in touch with the latest scientific and technical developments and as a valuable time-saver for their factory and technical executives in consulting the ever-increasing volume of matter relating to rubber and allied subjects.

Packing Hose for Overseas

An American company making hose has recently worked out in conjunction with its agent in Johannesburg, South Africa, a plan for shipping which greatly reduces excess packing weight and has also faciltated handling. Hitherto the makers had been sending hose of medium lengths in heavy, cumbersome cases, with the longer lengths rolled on wooden reels. Freight costs were high, handling was difficult, and the storage problem was often serious. On the advice of the agent, the makers now oil, loosely tie with stout cord, wrap in heavy paper, and completely encase in burlap the 50, 100, and 200-ft. lengths of ½-, ⅜- and ¾-inch hose, or approximate lengths and sizes. The burlap covering is drawn fairly tight and securely sewed, stenciled, and marked. It is stated that the new mode of shipping has proved very satisfactory, and that the goods arrive in excellent condition. Some customers require 500-ft. lengths, and in such cases shipment is made on wooden reels.

A Transparent Rubber Mix

F. Harriss Cotton, B.Sc., A.I.C., gives the following formula for a good transparent rubber mix: 100 parts pale crepe, 2 of zinc stearate, 2 of light magnesium carbonate, 2 of precipitated sulphur, and 0.5 of Vulcator VI. Vulcanizing is done in 5 minutes at 20 pounds' steam pressure. With crepe a light yellow vulcanizate is obtained, and with sprayed latex a darker shade. Best results are said to be obtained with an ultra accelerator which does not require direct activation with zinc and with a minimum of sulphur so that but little of the latter will be left to bloom out. To get a lustrous, celluloid-like, grease-resisting surface, superficial chlorination is suggested. A great future is possible, it is said, for transparent rubber goods colored with organic dyes.—*India Rubber J.*, London, June 8, 1929, p. 9.

Aviation

The "Sky Fleet," the eight airplanes of the General Tire & Rubber Co., Akron, O., has completed several laps on its tour around the country. The fleet has visited cities and airports in New York, Pennsylvania, Virginia, Maryland, Ohio, Indiana, Michigan, Kentucky, and West Virginia. Recently a visit was paid to Boston, Mass.

This fleet, the only one of its kind for commercial purposes, is used also as an experiment to determine whether the rubber company will equip certain of its salesmen with airplanes to cover areas where cities and towns are spread far apart such as in Texas and throughout the West. The pilots and planes are displaying several inventions sponsored by the General Tire & Rubber Co. to provide safety in aviation. Among them is a helmet which will make a fractured skull an impossibility in the event of a crash. The planes have more rubber and rubber devices than any others in use.

The "Firestone," 12-passenger trimotor transport ship of the Firestone Tire & Rubber Co., Akron O., recently completed a 5,000-mile trip covering fourteen southwest and midwest states. The trip, one of the longest ever taken by an industrial group, included Memphis, Mobile, New Orleans, Houston, San Antonio, Austin, Ft. Worth, Dallas, Oklahoma City, Kansas City, Chicago, and South Bend. An average of 700 miles per day was made on a schedule requiring seven days.

The "Firestone," piloted by William M. McConnell, has been chosen flagship of the fleet of planes on the Goodwill Air Tour sponsored by the Ohio Chamber of Commerce.

Goodyear was well represented when the Graf Zeppelin landed on August 4, after completing its second westward trans-Atlantic voyage. In the vast throng on hand to welcome the great German dirigible were Dr. Karl Arnstein, vice president of the Goodyear-Zeppelin Corp., Fred M. Harpham and W. H. Collins, vice president and superintendent, respectively, of The Goodyear Tire & Rubber Co., all of Akron, O.

The "Defender," sixth and largest of the pony blimp fleet of The Goodyear Tire & Rubber Co., Akron O., made its first test flight on August 20. The blimp will carry six passengers and develop a speed of 70 to 80 miles per hour. It has a gas capacity of 160,000 cubic feet and is three times the size of the "Pilgrim" and nearly twice the size of the "Puritan."

The "Los Angeles," Goodyear dirigible, has been equipped with a trapeze-like contraption which has proven successful during recent tests in snatching airplanes from the air. The two giant dirigibles being built by Goodyear at Akron will be equipped with similar apparatus, which will enable them to take four large bombers up into their hulls for repairs, then release them again in the air, parachute like. The successful development of this device is believed to have commercial use in discharging passengers at intermediary points on long dirigible flights.

Air Services, Inc., Akron, O., agent for twenty-eight types of planes, was largely instrumental in having Akron University add theoretical courses in aerodynamics, meteorology, and navigation to its curricula. Air Services pays the tuition of its students for these courses. Included among the directors of Air Services are: C. W. Seiberling, William O'Neil, and H. S. Firestone, Jr.

Dutch Brand Products for Automobile and Airplane

VAN CLEEF BROS., manufacturers of rubber and chemical products, Woodlawn Ave., Chicago, Ill., make certain products especially for automobile accessory jobbers and aeronautical work. Dutch Brand Friction Tape is free from pin holes, will not ravel, has great adhesiveness, is tough and strong, and will resist 2,200 volts and over of electric current. Each Dutch Brand Auto Top Patch Kit contains a strip of patent coated patching material measuring 36 by 3½ inches and a 1 by 4-inch tube of extra adhesive cement. The "7711" rubber cement is a quick air-drying cement for patching inner tubes and other rubber articles. It is claimed that the Dutch Brand Auto Top Cement makes permanent waterproof patches.

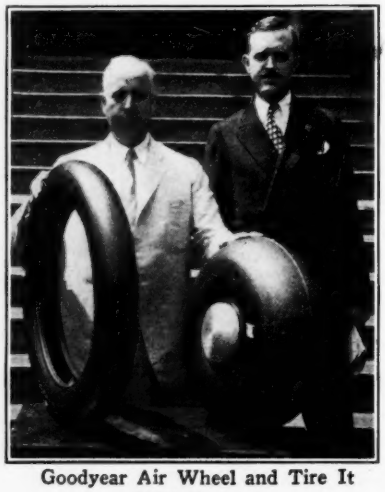
A New Airplane Wheel

DEVELOPMENT of the Goodyear air wheel, Musselman type, increasing the safety factor in airplane landings and take-offs, was announced recently by P. W. Litchfield, president of The Goodyear Tire & Rubber Co., Akron, O.

The new tire is revolutionary in design, a full balloon casing mounted directly on a hub attached to the plane undercarriage, eliminating rim, spoke, and wheel. Thus, the casing has the dual function of tire and wheel.

Goodyear plans that the air wheel will make costly auxiliary shock absorbers unnecessary, thereby adding to the useful load-carrying possibilities of heavier-than-air ships. Other outstanding advantages claimed for this new type tire include extreme cushioning for landings; traction in snow, ice, sand, and mud; nearness to perfect streamline; elimination of ordinary ground looping; and greater security in cross wind and deflated tire landings. The air wheel gives larger air volume at extremely low pressure, and extended experiments and tests show it capable of sustaining huge loads under ordinary service conditions.

The casing is mounted upon a specially designed hub, furnished with or without an internal expanding brake, similar to well-known standard types.



Goodyear Air Wheel and Tire It Will Replace

Smooth and efficient braking has been attained in tests since aviation engineers have stressed the desirability of quick automatic action.

The secret of anti-bouncing and absorption of shocks in the air-wheel type of tire lies in the low pressure and large air volume, Goodyear engineers explained. The shocks are dissipated in the greater air volume attained in the casing. The huge sectional diameter of the air wheel as compared to its height produces a flat or web-foot effect when landing, making it possible for a plane to make contact safely on soft ground, snow, and rough terrain where high-pressure tires might cause a crash.

Elimination of the regular wheel takes from the airplane one more element of danger—collapsing wheels. Further safety is claimed for the Musselman type tire inasmuch as tests prove conclusively that the straight sidebeads with steel wire rings prevent the casing from climbing the hub flange.

The illustration shows P. W. Litchfield holding the new air wheel and a high-pressure tire, which it will replace. With Mr. Litchfield is P. E. H. LeRoy, treasurer.

Financial and Corporate News

Garlock Packing Co.

The Garlock Packing Co., Palmyra, N. Y., reports for the six months to June 30 a net profit of $414,538 after all charges, including certain non-recurring items and federal taxes, equal to $2.07 a share on the 200,000 shares of no par capital stock outstanding, as compared with $2.87 a share on the same basis during the entire year of 1928 and $2.21 a share annual earnings during the five years 1924-1928 inclusive. An increase of 17 per cent in sales over the first half of 1928 was reported.

United States Rubber Co.

TO THE STOCKHOLDERS: During the six months ended June 30, 1929, various changes have been made in the organization of your company, as explained in the letter to the stockholders and employes dated April 23, 1929. The benefits of these changes can be felt even at this time, although it is too soon to show real results in financial returns. It is believed that tangible benefits will accrue for the company within a reasonable period.

Consolidation of activities has permitted the closing of two additional plants since the first of the year and consideration is being given to further consolidations. Studies of costs of production and methods of distribution are being made, the quality of our products is constantly under supervision and new processes are being developed or acquired.

Operations for the Period

Net sales after all discounts and allowances amounted to $86,073,346 for the six months, an increase of $1,892,240 or 2.25 per cent over the corresponding period of 1928 on a comparable basis. The sales and earnings for the first six months of 1928, as reported at that time, included an estimate for one of the subsidiary companies which proved to be too high. Actual figures for all activities have been obtained for the current period and comparisons are made with the corresponding amounts for the first six months of last year, including three additional subsidiary companies now consolidated, which were carried as investments prior to December 31, 1928.

Selling prices of all commodities averaged substantially lower this year than last year. Unit sales of tires increased, but there was a slight decrease in the dollar value because of continuing lower selling prices. Decreases in sales occurred in miscellaneous commodities such as soles and heels, flooring, rubber clothing, and reclaimed rubber. Sales of waterproof footwear, Keds, and mechanical goods such as packing, hose, molded specialties, wire, etc., increased over the corresponding period of last year both in value and in units. Golf ball business increased materially, both as to sales and profits. Sales in foreign countries through the export subsidiary continue to show substantial increases. The operations of the chemical subsidiary, which supplies your company as well as outside customers, were gratifying.

Net income after all charges, including interest on funded indebtedness and increased provision for depreciation of plants, amounted to $596,926. This is an improvement of $2,686,923 over the first six months of 1928 when expressed comparably, in addition to the loss of $14,147,659 incurred last year due to the adjustment of the value of rubber in all inventories as of June 30, 1928. No adjustment in value of inventories was necessary as of June 30, 1929. No dividends were taken from the plantations company during the first six months of this year, whereas $1,000,000 was received during the first six months of 1928.

Production of rubber on the plantations owned by your company continues to show substantial increases and the earnings, in view of the lower market price of crude rubber, have been satisfactory. Net income, after liberal reserves for amortization, depreciation, and foreign income taxes, amounted to approximately $350,000, none of which has been included in the consolidated earnings of the United States Rubber Co.

Current Assets and Liabilities

The current financial position of the company at June 30, 1929, was as follows:

Current Assets		
Cash	$7,822,167	
Accounts and notes receivable from customers, less provision for doubtful accounts	38,436,295	
Accounts and notes receivable from others	2,045,487	
Total cash and receivables		$48,303,949
Finished goods	$47,917,382	
Materials and supplies, including goods in process of manufacture	24,487,669	
Crude rubber in transit to New York	2,381,840	
Total inventories		74,786,891
Total current assets		$123,090,840
Current Liabilities		
Bank loan (subsidiary company)	$2,500,000	
Accounts payable, including acceptances payable for importation of crude rubber	14,444,698	
Drafts and acceptances for crude rubber in transit to New York	1,580,392	
Total current liabilities		$18,525,090
Net working capital		$104,565,750

Bank loans have been reduced $23,250,000 since the first of the year by means of the funds secured through the sale of common stock in January, 1929. The remaining bank loan of $2,500,000 is that of a subsidiary company, which it was deemed advisable to continue.

The average value of all inventories was at cost or market prices, whichever were lower. Commitments for future deliveries were for conservative periods.

Funded indebtedness amounting to $2,903,000 was retired during the six months.

The provision for property and equipment adjustments and other contingencies amounting to $10,000,000, which was created at December 31, 1928, was reduced by $1,386,413 through charges covering the disposition of obsolete machinery and equipment including obsolete tire molds.

F. B. DAVIS, JR.
Chairman.

Approved by the Board of Directors,
New York, August 6, 1929.

Raybestos Manhattan, Inc.

Raybestos Manhattan, Inc., Passaic, N. J., and subsidiaries report for six months ended June 30, 1929, consolidated net income of $2,098,530 after charges and federal taxes, equivalent to $3.10 a share on the 676,012 no par shares of common stock to be outstanding as the sole capitalization of the corporation, which represents the merger of the Raybestos Co., the Manhattan Rubber Manufacturing Co., and the United States Asbestos Co.

In the first six months of 1928 the aggregate net income of the three companies, without allowing for inter-company adjustments, was approximately $1,286,000, equal to $1.90 a share on the capitalization of the present merged company.

The B. F. Goodrich Co.

The regular quarterly meeting of the directors of The B. F. Goodrich Co. was held August 7, 1929. After the meeting the directors issued the following statement:

The operations of the company during the first six months of 1929 resulted in a net profit of $5,070,000 after provision for depreciation, interest, and federal income taxes. This amounts to earnings of $4.59 per share on the average number of common shares issued and outstanding during the period, or $4.09 on the shares outstanding June 30, after providing for dividends on the preferred stock.

The consolidated net sales for the first six months of the year amounted to $75,375,000.

The regular dividend of $1.75 per share was declared on the preferred stock, payable October 1, 1929, to stockholders of record September 10

A dividend of $1.00 per share was declared on the common stock without par value, payable September 2, 1929, to holders of record August 17, 1929.

All raw materials on hand and on commitment as well as in finished goods inventories are at values not to exceed market prices as of June 30.

Miller Rubber Co.

The Miller Rubber Co., Akron, O., reports for the six months ended June 30, 1929, net loss of $664,163 after all charges, comparing with net loss of $3,121,860 in the first half of 1928.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber	Com.	1½% q.	Aug. 15	.....
Boston Woven H. & R.	Com.	$1.50 q.	Sept. 16	Sept. 3
Firestone	7% Pfd.	$1.75 q.	Aug. 15	Aug. 1
Goodrich	Com.	$1.00 q.	Sept. 2	Aug. 17
Goodrich	Pfd.	$1.75 q.	Oct. 1	Sept. 10
Goodyear	Com.	$1.25 q.	Nov. 1	Oct. 1
Goodyear	1st Pfd.	$1.75 q.	Oct. 1	Sept. 1
Kleinert	Com.	$0.62½ q.	Sept. 3	Aug. 15

New Incorporations

THE MCDONALD RETREAD TIRE PROTECTOR, INC., June 21 (Delaware), capital stock 100,000 shares common, par value, $10. T. S., J. R., and J. J. McDonald, all of Pittsburgh, Pa. To manufacture tires.

MURRAY TIRE CORP., July 30 (New York), capital stock 200 shares no par value. M. Meyerhoff, 218 Broadway, New York, N. Y., J. Shelz, and I. Kahn, both of 1218 Bedford Ave., Brooklyn, N. Y. Principal office, Kings County, N. Y. To manufacture tires.

THE OHIO FIBRATED ASPHALT & RUBBER CO., June 18 (Delaware), capital stock is 1,000 shares preferred, par value, $10, and 1,500 shares common, par value, $10. J. V. Pimm, A. G. Bauer, both of Philadelphia, Pa., and R. L. Spurgeon, Wilmington, Del. To manufacture and deal in rubber goods.

THE SHERBONDY RUBBER CORP., July 19 (Delaware), capital stock 5,000 shares preferred, par value, $100, and 10,000 shares common without nominal or par value. M. S. Cook, A. L. Raughley, and J. M. Townsend, all of Dover, Del. To manufacture and deal in rubber and gutta percha.

TINGLEY-RELIANCE RUBBER CORP., Aug. 2 (New Jersey), capital stock 2,000 shares of preferred, par value, $100, and 4,000 shares of common without par value. W. & M. B. McCollum, and D. Armstrong, all of St. Georges Ave., Rahway, N. J. Principal office, 6 Ross St., Rahway, N. J. To manufacture and deal in rubber, gutta percha, etc.

Treasury Decisions

BALLS, No. 8972. Protests 320552-G, etc., of Geo. Borgfeldt & Co. (Baltimore), and protests 343834-G, etc., of S. Lisk & Bros. et al. (New York). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402.

Opinion by J. Sullivan. In accordance with stipulations of counsel and on the authority of United States *v.* Woolworth (16 Ct. Cust. Appls. 421, T. D. 43136) rubber balls were held dutiable at 30 per cent under paragraph 1402. *Treasury Decisions*, Vol. 55. No. 25, p. 41.

RUBBER BOOTS AND SHOES, No. 9274. Protest 112422-G of B. F. Goodrich Co. (Cleveland.) Articles intended for experimental purposes. Rubber boots and shoes and metal lasts, classified at 20 per cent ad valorem under paragraph 1439 and at 40 per cent under paragraph 399, tariff act of 1922, are claimed entitled to free entry under section 308 as articles intended for experimental purposes.

Opinion by J. Waite. There was no evidence produced by anyone having personal knowledge of all the facts surrounding the importation and exportation of this merchandise. On the record presented the protest was overruled. *Treasury Decisions*, Vol. 56, No. 3, p. 41.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
1243	Manufacturer of rubber paint.
1244	Manufacturer of rubber collars.
1245	Manufacturer of molded cushion rubber for goggle frames.
1246	Manufacturer of compound and tote boxes.
1247	Source of supply of red oil or oleic acid.
1248	Manufacturer of Vacco, a pure rubber gum chemically treated.
1249	A firm in Greece desires to represent an American manufacturer of inner tubes.
1250	Manufacturer of large inflated animals.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

NUMBER	SPECIAL CIRCULARS
2384	Imported Gloves to Bear Mark of Origin in Canada.
2388	British Exports of Automobile Tires and Inner Tubes, First Four Months, 1929.
2390	British Exports of Automobile Casings, May, 1929.
2391	British Exports of Footwear—May, 1929.
2395	Survey of French Balloon Market by Consular Districts.
2400	Dealers' Stocks of Waterproof Footwear in the United States, July 1, 1929.
2403	Hungarian Government Measures Against Use of Foreign Tires.
2407	Crude Rubber Reexports from the United States—June, 1929.
2411	Crude Rubber Reexports from the United States—First Six Months of 1929.
2413	Canadian Tire Exports, June, 1929.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

NUMBER	COMMODITY	CITY AND COUNTRY	PURCHASE OR AGENCY
39,652	Tire patches	Barcelona, Spain	Agency
39,711	Hose and belting	Oslo, Norway	Agency
39,712	Hose and bands	The Hague, Netherlands	Either
39,713	Billiard cushions	Hamburg, Germany	Purchase
39,714	Shoes and overshoes	Frankfort, Germany	Agency
39,715	Bathing caps, balls, and gloves	Prague, Czechoslovakia	Agency
39,717	Overshoes and gymnastic shoes	Hamburg, Germany	Agency
39,718	Overshoes	Munich, Germany	Agency
39,719	Toys	Berlin, Germany	Agency
39,720	Insulating tape	London, England	Agency
39,722	Shoes	Copenhagen, Denmark	Agency
39,726	Overshoes and boots	Berlin, Germany	Agency
39,736	Toys	Hamburg, Germany	Agency
39,873	Rubber goods	Copenhagen, Denmark	Agency
39,950	Erasers	Concepcion, Chile	Agency
39,996	Toy balloons and waste rubber	Frankfort, Germany	Agency
40,029	Tennis shoes and oxfords	Manila, P. I.	Both
40,030	Boots	Havre, France	Purchase
40,031	Footwear	Oslo, Norway	Agency
40,032	Crepe rubber	Paris, France	Agency
40,033	Tires and tubes	Rome, Italy	Agency
40,034	Tennis shoes	Bogota, Colombia	Agency
40,036	Footwear	Oslo, Norway	Agency
40,038	Sporting goods	Plauen, Germany	Either
40,059	Boots and waterproof clothing	Hamburg, Germany	Purchase
40,060	Bathing caps, shoes, belts, and rubber goods (wearing apparel)	Zurich, Switzerland	Either
40,064	Waterproof coats	Winnipeg, Canada	Agency
40,073	Bathing caps and novelties	Vienna, Austria	Agency
40,125	Bathing caps	Hamburg, Germany	Agency
40,135	Belting	Milan, Italy	Agency
40,202	Matting	Montreal, Canada	Agency
40,203	Bicycle tires	Aguadilla, P. R.	Agency
40,204	Erasers	Smyrna, Turkey	Either
40,206	Sheet rubber	Bombay, India	Both
40,246	Crepe and rubber goods	Oporto, Portugal	Both

The Rubber Industry in America

OHIO

R. H. Freitag Manufacturing Co., Akron, O., through its president, Dick Freitag, announced that the new addition was completed about the end of August. New equipment will be installed in September in a new brick building, 22 by 100 feet, one story high. This will require about twenty additional workers. The machinery is up to date and designed for high-precision work. Mr. Freitag stated that this expansion was necessitated by the ever-increasing demands placed upon present facilities.

The Miller Rubber Co. of N. Y., Akron, O., announces a new tire, the new Miller Geared-to-the-Road, which is guaranteed to outwear any other tire of equal price when run under the same conditions.

Mason Tire & Rubber Co. officials have emphatically denied the reported sale of the Mason plant at Kent, O. Everything is progressing even better than anticipated and any rumors or statements intimating a sale are entirely unfounded and should be ignored.

The B. F. Goodrich Co., Akron, O., factories and offices, held their annual Goodrich "Play Day" at Euclid Beach, Cleveland, O., on August 12. 45,000 employes, their families, and friends attended, forming a cavalcade of 15,000 automobiles in addition to five special trains. One of the main features of the picnic was the selection of the most beautiful girls in the plant. The winner, Miss Jeanette Cox, was crowned Miss Silver Fleet and given $100 by James Tew, president. Other winners received $25 prizes and minor crowns as Miss Silvertown, Miss Mechanical, Miss Processing, Miss Engineering, Miss Office, and Miss Zipper.

The Dill Manufacturing Co., maker of valves and valve parts, has just announced the purchase in Cleveland, O., of new and larger factory facilities. The new property contains more than five acres, and plans are already under way for a new plant that will afford a largely increased capacity.

According to L. F. Body, sales manager, steadily increasing business with a more complete line of products has made advisable larger quarters, where manufacturing can be carried on much more efficiently.

In addition to valves and valve parts, both for the tire manufacturer and retail trade, Dill has recently added air-chucks, and has plans for other products to be developed when established in the new quarters.

The Swinehart Tire & Rubber Co., Akron, O. A petition has been filed in federal court asking that a receiver be appointed and that the factory be sold to pay claims of creditors. The petition was filed by the English Mica Co., of New York, and Poncet Davis Co. and C. P. Hall Co., both of Akron. Liabilities are set at $450,000, and assets are not estimated. Thomas F. Walsh, president of the Swinehart company, states however, that the suit has been indefinitely postponed and that the company is now taking steps for reorganization and issuance of new stock in an effort to secure additional needed capital.

Joseph A. Andreoli, export manager of the India Tire & Rubber Co., Akron, O., has returned from a three months' tour of Europe. He reported increased prosperity in Europe, which should encourage a demand for higher quality in tires.

Goodrich and Hood to Consolidate

Announcement was made on August 19 of the proposed consolidation of The B. F. Goodrich Co., Akron, O., with Hood Rubber Co., Watertown, Mass., uniting two of the oldest and best-known rubber companies in the United States.

The plan of consolidation provides that Goodrich shall acquire the assets and business of the Hood company through a subsidiary company which will assume the Hood company debts; that all Hood and Hood Products preferred and special stocks shall be paid off in cash at the earliest call date at their respective redemption prices; that Hood common stockholders shall receive one share of Goodrich common for two shares of Hood common, requiring a total of 100,000 shares of Goodrich common.

Goodrich is one of the largest manufacturers of tires and mechanical and other rubber goods, and Hood products include rubber and canvas footwear. Thus the two businesses are largely complementary, and their consolidation should result in substantial economies. The Hood business will be operated as a separate unit. In 1928 total Goodrich sales amounted to $148,000,000 and Hood, $30,000,000.

The Hood company shareholders' meeting has been called for August 30 to authorize the transaction which already has received the approval of both boards of directors.

The Anderson-Prichard Oil Corp., Oklahoma City, Okla., producer of rubber solvents, will establish a branch department on Mogadore Rd., East Akron, O., consisting of warehouse, office, and eight tanks on two acres of land. Bruce Dodd is local manager.

P. W. Litchfield, president of The Goodyear Tire & Rubber Co., Inc., announced recently that production was being transferred from the Cuyahoga Falls plant of the Marathon Rubber Co., a subsidiary of Goodyear, to the Goodyear plants at Akron. For some time a large portion of the Marathon production has been made in the Goodyear-Akron plants and because of the savings possible through mass production in a larger plant, it has been decided to bring all of the Marathon production to Akron. This move will in no way affect the present sales policies of the Marathon Co., but is expected to give the company a fuller and more complete line of tires, including a new super-tire which will be announced very shortly.

W. O'Neil, president of the General Tire & Rubber Co., Akron, O., in response to a query from a Boston financial bureau asking his opinion on the tendency in prices and the prospects for business in the rubber and tire industry, said:

"The consumption of crude rubber is now catching up to its production at capacity, and certainly within a year tire prices will be higher because of higher crude prices.

"Our company has been operating all year at peak capacity. It is the general opinion that the average late spring all over the country has left rather large stocks of manufactured tires in the hands of manufacturers."

The Skinner-Goodwin Boot & Rubber Co., 129 N. Holloway St., Dayton, O., manufactures rebuilt tires, tire boots, and reliners. Jordan C. Skinner is president and treasurer.

The B. F. Goodrich Co., Akron, O., according to President James D. Tew, has effected several changes in executive duties. J. H. Connors, former president of the Republic Rubber Co., Youngstown, O., was appointed general manager of the mechanical division, in charge of manufacturing and sales.

Additional duties have been assigned to T. G. Graham, first vice president, and to T. B. Farrington, in charge of factory service division.

These changes are effective immediately. Mr. Graham will take over complete management of the manufacturing and sales of the tire division. He will continue in charge of the

Henry Ford's Plantation Will Stimulate Market

Henry Ford in an interview given the North American Newspaper Alliance states that a 4,000,000-acre rubber plantation in Brazil will not demoralize the market. The more rubber the better it will be for the rubber industry—and that applies to synthetic rubber as well.

Prices will keep up instead of dropping, for a rubber surplus will force new uses. There are thousands of new uses for rubber, but we will never discover them until we produce so much rubber that it will be necessary to study how to utilize it.

"Supply makes demand, and then demand increases the supply."

health and production control departments. Mr. Farrington will take charge of processing and machine development, in addition to the other two jobs.

Mark L. Felber, for seven years publicity director at the Firestone Tire & Rubber Co., and later publisher of the *East Akron Herald,* has joined the publicity department at The Goodyear Tire & Rubber Co., Akron, O. Mr. Felber will be associated with the aeronautical branch.

National Rubber Machinery Co. employes, Akron O., held their annual picnic at Nesbith Lake on August 10. About 300 employes and their families attended. Various races and contests including a tug-of-war and a soccer game were held.

The Goodyear Tire & Rubber Co. employes, Akron, O., held their annual outing on Saturday, August 10, at Meyers Lake. There was an all-day program of water sports, contests, and stunts.

Rubber Section N. S. C.

The Eighteenth Annual Safety Congress of the National Safety Council will be held at Chicago, Ill., on Sept. 30 to Oct. 4, 1929. The Rubber Section will meet at the Stevens Hotel on Sept. 30, Oct. 1, and Oct. 2.

Automobile Production

July production (factory sales) of motor vehicles in the United States, as reported to the Department of Commerce, was 500,331 of which 426,159 were passenger cars, 73,118 trucks, and 1,054 taxicabs, as compared with 545,375 passenger cars, trucks, and taxicabs in June and 392,086 in July, 1928.

NEW JERSEY

The New Jersey rubber industry continues good. The summer season has increased orders for tires, tubes, and athletic shoes. Mills manufacturing mechanical goods report no let-up in production. Hose, belting, and packing departments have long been busy and hard rubber production also shows some improvement. Rubber cloth for automobiles and other vehicles is in demand, while the canning season has been very profitable for dealers who handle jar rings.

Rubber Cement Mfg. Corp., Millington, N. J., will hereafter be known as Rubber & Asbestos Corp., 26-38 Cornelison Ave., Jersey City, N. J. The business will be conducted under the same management but in larger quarters and with much better shipping facilities.

The Lambertville Rubber Co., Lambertville, N. J., which was recently reopened after having been closed for a long time, is operating to capacity in some departments. About 150 hands are now employed and the working force is gradually being increased. The concern is manufacturing boots, shoes, rubbers, and other articles.

The company has asked the Hunterdon Co. Tax Board to reduce its assessment of $50,000 to $25,000. The application was granted.

Walter T. Scott, former manager of the Chicago branch of the Lambertville Rubber Co., is now located at the company's home offices. William E. Crowley, a veteran employe of the company, has been made superintendent.

Combination Rubber Co., Trenton, N. J., announces that business is very good and that sales in both tires and tubes are increasing.

H. B. Slusser, vice president and treasurer of the Pocono Rubber Cloth Co., Trenton, N. J., and a resident of Princeton, N. J., is enjoying a month's vacation in California and other places in the Far West. He is accompanied by his family.

Clifford H. Oakley, president and general manager of the Essex Rubber Co., Trenton, N. J., recently sailed for Europe with his family. He expects to be absent for some time and plans to visit a number of European countries.

The Pierce-Roberts Rubber Co., Trenton, N. J., continues to operate with day and night shifts in manufacturing mechanical molded goods.

C. O. Tingley & Co., Rahway N. J., and the **Reliance Rubber Corp.,** Keyport, N. J., have been combined under the name of Tingley Reliance Rubber Corp., with offices at 6 Ross St., Rahway. The company will manufacture molded rubber goods, plumbers' supplies, and druggists' sundries. The capital stock of the new company is $200,000 preferred and 4,000 shares common.

William McCollum, who was head of the Tingley company, is president of the merged concern and holds a controlling interest. P. N. Furber, president of the Trans-lux Co., is vice president; J. A. MacEwan, president of the former Reliance Rubber Corp., treasurer; and David Armstrong, of Rahway, secretary. Mrs. Belle McCollum, wife of the president, also is a member of the board of directors.

The Murray Rubber Co., Trenton, N. J., which started a system of chain stores some time ago, now has about 500 in operation. The stores were first opened in the South and have since been established in many parts of New Jersey and Pennsylvania. The company announces that it is increasing its capacity.

Bruce Bedford, president of the Luzerne Rubber Co., Trenton, N. J., Mrs. Bedford, and their two sons have returned from an extensive tour of Europe. They were absent two months.

William J. Connor, of Trenton, N. J., has been appointed by Chancellor Walker as receiver for the Fidelity Industrial Corp., formerly known as the Fisk Flap Tube Rubber Co., Yardville, N. J. The action was unopposed by stockholders and creditors. The appointment was asked by Paul H. Wendel, appearing for himself, who alleged that the company was insolvent and that dissipation of the assets was threatened through legal action. He holds 1,001 shares in the corporation. The rubber company was organized by the late C. Francis Fisk, who patented a flap tube. Following the death of Fisk the plant was closed for a long time.

Whitehead Bros. Rubber Co., Trenton, N. J., is operating twenty-four hours a day in all departments. Many hose orders are yet to be filled.

The Luzerne Rubber Co., Trenton, N. J., reports that hard rubber production shows a good increase over last month.

The Joseph Stokes Rubber Co., Trenton, N. J., is erecting two factory buildings to take care of increased business. One of the structures will be 40 by 70 feet and the other 36 by 58 feet. Both will be of concrete and steel, and the contract price is $20,000.

The Puritan Rubber Co., Trenton, N. J., has let a contract for the erection of an addition to its office on Perrine Ave. The company has been crowded for office space for some time. The concern continues to operate to capacity.

William Exton, head of the manufacturers' division of the Cupples Rubber Co., St. Louis, Mo., has been spending two weeks visiting relatives in Trenton, N. J., and Philadelphia, Pa. Mr. Exton is a native of Trenton and has many friends there.

EASTERN AND SOUTHERN

H. Stuart Hotchkiss, chairman of the board of the General Rubber Co., crude rubber subsidiary of the United States Rubber Co., New York, N. Y., and in charge of plantations, has just returned to New York after six months in the Far East. He stated that 20,000 additional acres have been placed under cultivation in keeping with the policy of the company to maintain steady expansion of its rubber-growing facilities.

Titanium Pigment Co., Inc., formerly of 94 Fulton St., has announced the removal of its office to 60 John St., New York, N. Y. Telephone: John 3451 and 3452.

The Polytechnic Institute, 99 Livingston St., Brooklyn, N. Y., announces an evening course in Diesel and oil engines conducted by the Department of Mechanical Engineering. The course consists of twenty lectures of two hours each and twenty periods in the classroom and laboratory. The lecturers are J. Kuttner, editor of *Oil Engine Power,* and E. J. Kates, consulting engineer of New York. The laboratory and classroom work will be given by Professors Moore and Carvin. An additional feature will be two lectures on laboratory and fuel oils by C. V. Bacon, chemical engineer of New York.

Chas. S. Leslie, who has been engaged by Livingston & Co., 111 Broadway, New York, N. Y., to develop the rubber department of that concern, is a well-known rubber man with broad and comprehensive knowledge of crude rubber marketing.

Chemical Engineering Courses at Cooper Union

Cooper Union's Institute of Technology, Fourth Avenue and Eighth Street, New York, N. Y., will inaugurate this fall a free evening course in physical chemistry, thermodynamics, and allied subjects. Its purpose is to assist those men who obtained their engineering degrees before some of the most recent discoveries and methods were taught, to supplement their experience by a complete knowledge of the best modern practice, as recommended by the foremost engineering schools of the country.

The class will meet for two hours one evening each week beginning the week of October 7 and continuing to the end of April, with the usual Christmas recess. In this, as in all courses at the Union, tuition is free. Admission to the course will be open to any man holding a bachelor's degree in engineering from a recognized school. This requirement will be waived in the case of an applicant who can show that he has been at some time familiar with calculus and will not impose a drag upon the class.

The Spadone Machine Co., 15 Park Row, New York, N. Y., has recently developed a new bias cutter, which is automatic, accurate, and speedy. The latest model is designed to lower labor costs in fabric cutting.

United States Rubber Co., New York, N. Y., has announced that at the regular monthly meeting of the board of directors held on August 6, Carle C. Conway, president of the Continental Can Co., was elected a director to succeed Henry F. Miller, resigned.

V. G. Thomas, formerly selling compounding ingredients to the rubber trade under his own name, is now connected with Hammill & Gillespie, Inc., 225 Broadway, New York, N. Y., specialist in white pigments.

Rubber Products Corp., Doylestown, Pa., makes molded rubber goods for the milking-machine industry, automobile, airplane, and golf-ball manufacturers, besides several other products, all from customers' molds. Eugene S. Price is president.

Christian A. Ostby, master mechanic at the factory of the National India Rubber Co., Bristol, R. I., for the past 21 years, has been promoted to plant engineer of the Lycoming Rubber Co., Williamsport, Pa., a branch of the United States Rubber Co.

Linear Buys New Plant

Over 10,000 square feet of additional production space have been acquired by the Linear Packing & Rubber Co., Philadelphia, Pa., with the recent purchase of its new rubber mill on the main line of the New York Division of the Pennsylvania Railroad and the plaza of the new Tacony-Palmyra Bridge at Tacony, Philadelphia.

The Linear Packing & Rubber Co., whose main plant is at Marshall & Berks Sts., Philadelphia, is one of the oldest of its kind in the country, having been established to specialize in packing manufacture for all machinery requirements.

For five years prior to 1927 there was a marked increase in volume of rubber and duck-packing distribution. This led to a decision to change the name to Linear Packing & Rubber Company, Inc. The present expansion is directly in line with the company's policy of securing control of raw products, according to A. W. Swartz, president of the firm.

Facilities are now afforded for the full control of all raw rubber needed, together with equipment for producing the rubber cements used in packing manufacture. The new mill enables Linear to make molded rubber items for the oil industries, in addition to the present complete line of packings, as well as many special types of molded rubber goods.

General Atlas Chemical Co., 60 Wall St., New York N. Y., (owned and controlled by H. L. Doherty & Co.,) manufacturer of carbon black, offers to manufacturers technical service in the use of reenforcing carbon in rubber compounds. F. C. Batchellor is sales manager.

The Republic Rubber Co., Youngstown, O., has announced the appointment of C. W. Stanton as New York district manager, with offices at 11 Park Place, New York, N. Y. Mr. Stanton will have charge of both the railroad and general line mechanical business in his district. He has been connected with the rubber industry since 1916. Prior to joining Republic he represented the Boston Woven Hose & Rubber Co. in the Rocky Mountain territory.

Wallace S. Clark, manager of the cable division of the central station department of the General Electric Co., Schenectady, N. Y., has been retired at his own request, and F. H. Winkley has been appointed manager of the consolidated lighting and cable division in the same department. Mr. Clark entered the wire and cable department of the company in 1891 and in 1903 was made superintendent of the wire and cable, underground tube, and varnish departments. In July, 1904, he became engineer of the wire and cable department and in charge of sales for the department. With the formation of the central station department in 1924, Mr. Clark was made manager of the wire and cable division.

Tire Factory Planned For Soviet Union

The Amtorg Trading Corp., 261 Fifth Ave., New York, N. Y., announced that B. Kuritzin, chairman of the Soviet State Machine-Building Corp., M. Nikiforov, chairman of the Rubber Trust, W. S. Matlin, vice chairman of the Electrotechnical Trust, N. Levchenko, vice chairman of the Donugol Coal Trust, and 45 other Soviet executives and engineers arrived in the United States last month to study the American industry. A total of nearly 200 Soviet executives and engineers are at present in the United States on various business missions.

The Amtorg Trading Corp. reported on August 16 the consummation of a contract between the Soviet Rubber Trust and the Seiberling Rubber Co., Akron, O., in accordance with which the American firm will prepare the designs and all plans and specifications for the construction of a new tire factory in the Soviet Union. This factory, to be constructed probably at Yaroslavl, is to have an output of 3,100 automobile tires, 9,000 bicycle tires, and 480 motorcycle tires per seven-hour shift. Several foremen and workers of the Soviet Rubber Trust will work for a time in the Seiberling plants. Two Soviet engineers will participate in the designing of the tire factory.

Ground Broken for Goodrich's Atlanta Plant

The B. F. Goodrich Co. recently received formally the deed to a twelve-acre site purchased from the city of Atlanta, Ga. Transfer of the deed was effected in the mayor's office, with T. G. Graham, first vice president of the Goodrich company, tendering Mayor I. N. Ragsdale, of Atlanta, a check for $25,000 in payment for the property, sale of which had been duly authorized by the state and the city.

The company has arranged to purchase from private owners adjoining property, making a total site of about forty acres. On this will be erected a $1,500,000 tire and shoe factory. Actual construction of the plant will start not later than September 1, the Goodrich officials have announced, the plans being to reach a full-production basis early in 1930. By April 1, the plant will be turning out daily 5,000 automobile tires and 10,000 pairs of rubber-soled canvas shoes. Approximately 1,000 workmen will be employed.

Representing the Goodrich company in addition to Mr. Graham were T. B. Farrington, director of engineering; H. E. Cook, general superintendent of the engineering department; and J. L. McKnight, assistant secretary and counsel.

Activities of the Rubber Manufacturers Association, Inc.

A meeting of the Service Managers Committee of the Tire Manufacturers Division of The Rubber Manufacturers Association was held in Akron, O., at the Akron City Club on August 2. The text of the association's new educational booklet on the care of tires for passenger cars was finally approved. The booklet, the title of which is "Tire Tips", was ready for distribution about the latter part of August. Following the meeting, all those present were the guests of The Goodyear Tire & Rubber Co. on flights above the city and surrounding country in the company's dirigible "Puritan."

U. S. Rubber Acquires Dispersions Process, Inc.

The United States Rubber Co. has obtained control of Dispersions Process, Inc., by acquiring 38,000 of the 75,000 authorized common shares of the latter company, and the total authorized issue of 8,000 shares of preferred stock in return for 7,547 shares of its common stock.

Dispersions Process, Inc., incorporated under a Delaware charter in 1928, acquired all the assets of Research, Inc., and its subsidiary, Aqua Rubber Co., Boston, Mass., owning and operating under the patents of Wm. B. Pratt, relating to aqueous dispersions of crude and reclaimed rubber.

NEW ENGLAND

Meade Rubber Co., Stoughton, Mass., under a system involving co-operation and constant watchfulness, with insurance company, manufacturer, and employes all participating, has a record of no accidents in the shop in eleven months. On August 2, Ralph D. Flint, safety engineer for the casualty company, presented Patrick Mahoney, manager of the rubber plant, with the casualty company's banner emblematic of the great improvement in safety conditions. Particular credit was given Christopher Montgomery, mechanical engineer of the factory, for his tireless efforts in behalf of safety.

Revere Rubber Co., Chelsea, Mass., competing in the Massachusetts Safety Council industrial accident campaign, for the second time won the banner in its class for having had no loss-time accidents in its plant.

Bolta Rubber Co., which for more than ten years has been manufacturing hard rubber products outside the United States, will open a plant in Lawrence, Mass., primarily because a large part of its products is marketed in the United States. The rubber industry is new to Lawrence; so six experts will be brought there to teach local workers the special processes used by the company.

Building No. 3A of the Everett Mills group, a five-story brick structure containing approximately 70,000 square feet of modern manufacturing floor space, has been sold to the Bolta company. When the company is in full operation, it is expected that over 500 workers will be employed. Machinery is being shipped to the Lawrence plant and it is expected that it will be in operation about September 1.

The Bolta Rubber Co., which has been incorporated under the laws of Massachusetts, will maintain its main office in Lawrence. John Bolten is president, and Milton Shaw, of New York, is vice-president.

United States Rubber Co., New York, N. Y., has leased the two six-story and basement buildings at 556-566 Atlantic Ave., Boston, Mass., containing 23,331 square feet of floor space. The buildings will be used to provide for expansion of operations in New England.

The United-Carr Fastener Corp., incorporated under Massachusetts laws, succeeds by name the Carr Fastener Co. organized in 1907. The company is the largest manufacturer and distributer of metal fasteners in the world and has already acquired the business and assets of the United States Fastener Co., the oldest company in the United States in that field.

The new company will manufacture fasteners for automobile, airplane, and motorboat curtains, carpets, tops, and upholstering, luggage, footwear, gloves, raincoats, overalls, caps, and many other kinds of clothing.

The Boston Rubber Shoe Co., largest local subsidiary of the United States Rubber Co., will sell its real estate holdings of Factory No. 2 in Melrose, Mass., according to Leonard H. Goodhue, manager of Factory No. 1 at Malden. The Melrose factory, which formerly employed several thousand persons, closed last spring. The property comprises large brick factory buildings erected forty years ago, several houses on Main St., and ninety-five acres of land. The land extends from Main St. through to Washington St. and is intersected by the Boston & Maine Railroad. The valuation for tax purposes is $493,400 of which $373,000 is buildings.

Frank K. Espenhain, executive vice president of The Fisk Rubber Co., Chicopee Falls, Mass., recognizes air travel as a medium for saving time. He recently left the eastern plant for a hurried trip to the West Coast, making part of the journey by airplane to attend an important conference in San Francisco, connections for which could not be made by ordinary means of travel. Mr. Espenhain embarked at Columbus, O., flew to Los Angeles, and completed the balance of the trip to San Francisco by train, saving two days' time and reaching his western destination in time for the conference.

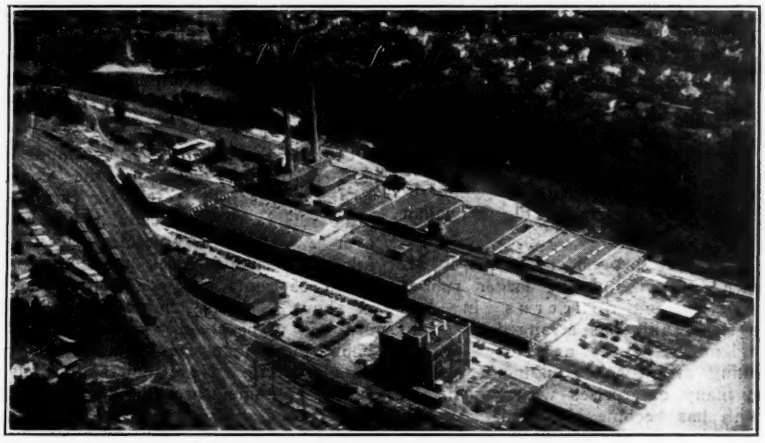
The Firestone Tire & Rubber Co., Akron, O., will erect a state distributing building near the corner of Forest Ave. and Baxter Boul., Portland, Me. An expenditure of about $90,000 is contemplated.

The Stedfast Rubber Co., formerly of Mattapan, has practically completed moving into new quarters at North Easton, Mass. The company manufactures rubber findings for shoes and is said to have outgrown its plant at Mattapan. Work will begin shortly, and about 130 people will be employed at the start. The management intends to hire local workers as far as possible, bringing only a few experienced hands with it.

United States Exports of Rubber Goods Increase

United States exports of rubber goods for the first six months of 1929 amounted to a value of $42,570,200, as compared to $36,216,100 during the corresponding period of 1928—an increase of 18 per cent. All classes increased in both volume and value—especially automotive rubber goods and miscellaneous rubber wares. January, 1929, started with an increase over the previous month, until the peak was reached during March, but since then exports have taken a downward tendency. It is anticipated, however, that exports will remain at a low level during the summer months until the fall shipments to the Southern Hemisphere and the heavy footwear trade to the northern countries cause increased activity in general. *Commerce Reports.*

MIDWEST



Aerial View of Part of the Gillette Factory

The Modern Gillette Plant

Gillette Rubber Co., Eau Claire, Wis., manufacturer of Gillette tires and tubes and molded rubber goods, is credited with having one of the most up-to-date plants in the rubber industry. Much progress has been made there during the past few years, and indications point to continued expansion.

In June the company completed its new four-story mill and calender building of reenforced concrete, brick, and steel, 200 by 135 feet. The old mill and calender room was entirely dismantled.

An addition, 50 by 135 feet, was built, doubling the size of the Banbury mixing room. In it was installed an automatic conveying system, which conveys compounds from the compound room to each of the Banburys and returns the empty compound pans, thus automatically eliminating the use of delivery trucks.

Gillette constructed also a new laboratory and cement-mixing building, a fireproof edifice 50 by 135 feet. The old building which housed the laboratory has been torn down to make room for another structure for tire calendering, tread mixing, and cutting machines, etc.

A 200-foot addition was made to the tire and stock-preparing room. Machinery and conveyers were installed, and all are now in operation.

The power house was enlarged 90 by 120 feet, and a new 750 h.p. Sterling high-pressure boiler was added to the four 350 h.p. boilers previously installed. The addition to the boiler plant was big enough to accommodate one more large boiler of the high-pressure type, and the addition to the power house is large enough to accommodate the new switchboard now in use. All power is transmitted from the power house to sub-stations throughout the factory, and all of the new motor equipment in the large sizes is of the synchronous type generally used throughout the industry.

The company is erecting a new reenforced concrete and brick tire-storage and shipping building, 170 by 240 feet. It is so constructed that loading can be done on the inside by fourteen cars at one time. Although at first the building will have three stories, foundations were laid to take care of two additional floors later.

Gillette Rubber Co. has been operating three eight-hour shifts constantly for four years and in that time has increased its production monthly on tires and tubes and also bicycle tires. At present the factory has a daily capacity of 10,000 automobile tires, 16,000 tubes, and 4,000 bicycle tires.

A. T. Murray, president and one of the founders of the Auburn Rubber Corp., Auburn, Ind., has announced that having completed the designing and sales plans of special shoe and floor products and sponge goods, to keep the factory busy, and with A. J. Kirstin, manager for the W. B. Foshay Co. operating interests, now familiar with the business, he has retired from active work as president of the corporation. He will, however, retain his financial interests and will continue in a friendly advisory capacity as a director. C. C. Darnall, vice president and head of the Industrial Department of the W. B. Foshay Co., Minneapolis, Minn., becomes the new president of the Auburn Rubber Corp.

The Western Rubber Co., Goshen, Ind., had extended to members of N. L. Kuehn Co., 298 Fourth St., Milwaukee, Wis., an invitation to attend its annual picnic. Ordinary means of transportation, however, involved several hours of traveling, an undesirable procedure. So a Fairchild cabin plane was chartered by Kuehn to take the party to and from Goshen, which was accomplished by a two-hour trip each way. The picnic was held at Lake Christiana, Mich. Guests from N. L. Kuehn Co. included the following executives: N. L. Kuehn, George McCredie, assistant manager, Gilbert Retzlaff, secretary, and Harold Keuper, salesman.

Frank S. Allison, president of the Allison Rubber Co., wholesale and retail tire distributer at Kansas City, Mo., has been appointed general sales manager of the Corduroy Tire Co., with headquarters at Grand Rapids, Mich.

U. S. Rubber Co. Moves Tire Activities to Detroit

Concentration at Detroit, Mich., of the tire activities of the United States Rubber Co. will be effected in the next few weeks, according to a recent announcement authorized by F. B. Davis, Jr., president.

This will involve the removal to Detroit of the executive, sales, and office staffs of the tire department from the present general offices at 1790 Broadway, New York, N. Y. Greater centralization of the tire manufacturing is planned for Detroit, including the transfer to that city of manufacturing operations now conducted at Hartford, Conn. The factory in Hartford will soon be closed until further notice.

While no official estimate has been given as to the increased employment due to these changes, it is expected that ultimately several thousand employes will be added.

At present only part of the tire production takes place in Detroit, in the former Morgan & Wright factories on E. Jefferson Ave. The factories are strategically located on the Detroit River with adjoining railroad facilities—in the center of the motor-car industry. The plant is being greatly improved in machinery and methods.

Two floors of one of the largest buildings in the group are being fitted up as offices for the manufacturing, engineering, and sales personnel. It is expected that the change in headquarters will take place about October 1.

L. D. Tompkins, vice president and general manager of the tire department, said that the expected advantages were economies in production, overhead cost, and management; closer proximity for deliveries to the motor-car and truck industry; more central location for general retail tire distribution; and closer supervision and coordination of all tire-building activities.

Among the important functions scheduled at Detroit are the large experimental or development department, machine shop activities, field engineering work, and technical service department.

PACIFIC COAST

United States Rubber Co. announces that J. B. Magee, recently appointed as Pacific Coast sales manager for the company's tire division, will make his headquarters in San Francisco, Calif., and will have charge of all the distribution in the eleven far west states, as also in the Hawaiian Islands and Lower California. Mr. Magee had been manager of the Los Angeles branch for many years and under his charge the force of salesmen increased from five to forty-six. A new appointment is that of Chester W. Ort as manager of tire sales in the Los Angeles district, he having been promoted from the post of branch manager at Portland, Ore. He had previously been branch manager in Spokane, Wash., and Salt Lake City, Utah. He entered the United States Rubber Co. service in Seattle in 1913.

Samson Tire & Rubber Corp., Los Angeles, Calif., continues in heavy production of tires and tubes, although it has been somewhat handicapped of late while moving much heavy machinery from its No. 1 plant in Compton, Calif., to the big factory which it is building in Los Angeles. The new works are now enclosed, all the outside machinery is in place, and it is expected that by the middle of September the company will be able to have all its manufacturing activities concentrated under one roof. As soon as the production end has been fully set up, the company will hasten the completion of the six-story administration building. When this is finished, arrangements will probably be made for a formal opening of the new works and announcement made as to what disposition will be made of the plants being operated at Compton and San Diego. It is stated that the output has been kept well up to the high quota set at the beginning of the year, and that the past six months' business has been the largest in the company's history.

Patterson-Ballagh Corp., 65th St. and Wilmington Blvd., Los Angeles, Calif., according to President C. L. Patterson, has for the past five months been operating at full capacity. The concern began manufacturing rubber specialties for oil-field work seventeen months ago and has been very successful. A new product for which a large demand has developed is a double-seal oil-pump piston with a rubber element giving a squeegee and pulsating effect with exceptional efficiency and durability. In general rubber mechanical goods the average monthly output is now over 26 tons.

The Garlock Packing Co., Palmyra, N. Y., reports an unusually good business on the Coast, the rubber factories being especially large users of its special packings for rams and plungers of heavy-duty hydraulic presses, pumps, and accumulators. The products for the upper coast field are distributed through a San Francisco branch in charge of C. D. Allen at 671 Mission St. and in the southern section through a Los Angeles branch in charge of C. W. Harmon at 2469 Porter St.

William Yule, of the executive personnel of The B. F. Goodrich Co., Akron, O., was a recent visitor in Los Angeles, having stopped over while returning from a trip to the Hawaiian Islands.

E. M. Smith, president of the E. M. Smith Co., one of the larger rubber manufacturing concerns in Los Angeles, Calif., has arranged to go to England to set up a factory for the making of oil-well equipment, one of the many enterprises with which Mr. Smith has become identified. An airplane made by the Emsco Aircraft Corp., which Mr. Smith also heads, undertook recently to break the world's non-refueling endurance record.

C-T-C Tire & Rubber Co., Portland, Ore., is planning to resume its former activity soon in tire production. Plans are pending for the infusion of additional capital so as to put production and distribution on a more efficient basis. The company has an exceptionally good factory and mechanical equipment for tire making but has been handicapped in marketing operations through inability to extend dealers' credits in competition with larger competitors. A report from the financing committee is expected early in September.

Sebrac Sales Co., Inc., 415 Eighth Ave. N., Seattle, Wash., one of the large rubber repairing concerns in the Northwest, reports business unusually good in tire vulcanizing and in making and marketing boots and reliners. Lately the company has been adding many automobile accessories. S. E. Brackett is president and manager, and B. E. Hoehn, secretary and treasurer.

India Tire & Rubber Co., according to Pacific Coast Manager W. R. Wheatly, has appointed T. E. Osborn as credit manager for the coast division. He will be stationed at India headquarters, 455 Second St., San Francisco, Calif. Mr. Osborn is well acquainted with tire-trade conditions in the Far West, having been coast operating manager for the Dayton Mfg. Co. for 7½ years before becoming credit manager of the India company branch in Philadelphia several months ago.

Rubber manufacturers on the Coast are very much interested in the efforts of the leaders in the oil industry, aided by federal and state agencies, to check the overproduction of crude oil. President E. B. Reeser, of the American Petroleum Institute, says that new measures to prevent natural-gas waste alone will curtail California oil production by about 200,000 barrels daily. Manufacturers of the numerous rubber essentials for the oil industry remark a much more cautious buying habit on the part of many big oil companies, even though it has not yet reached the hand-to-mouth purchasing stage. The goods apparently most affected are the standard lines, specialties of outstanding advantage being still in strong demand.

Storage battery cases continue to find a lively market on the Coast. Requirements of this area for cars and radio sets in 1929 are estimated at well over 2,000,000. Wholesale prices on fair-grade rubber cases are quoted at about 65 cents and composition cases at about 48 cents. Sales of the latter are said to be steadily mounting, price being more than ever a strong factor in marketing. Nevertheless the hard rubber containers are holding their own well among discriminating buyers. The Willard company's decision to establish a coast factory is one of the latest developments of importance in the battery field, and rumors persist that the U. S. L. Battery Corp is planning to manufacture on the Coast. An aggressive factor in the battery-making business is the Durkee-Thomas Co., of San Francisco and Los Angeles, Calif., which does a large domestic and export trade especially in hard-rubber-cased batteries. The Los Angeles factory was recently moved to larger quarters at 2029 E. Bay St., and is in charge of S. A. Banks.

The Lombard J. Smith Co., 324 N. San Pedro St., Los Angeles, Calif., which sells many leading makes of rubber machinery, reports that despite a seasonal easing off in factory buying business has of late been better than a year ago. Robert E. Orr of the company has just returned from a trip of several months in the Midwest and East, where he visited all the factories which his concern represents on the Coast and also arranged to take on the agency for several additional tire machinery makers.

Griffith Rubber Mills, Portland, Ore., according to Assistant Manager U. A. Keppinger, has had a 20 per cent increase in sales for the past seven months as compared with a similar period in 1928, largely due to the expansion of the paper-making industry in the Northwest. The company specializes in the recovering of press rolls, while making rubber-faced pulleys and general mechanical goods also. It has had much success with its new porous rubber top press roll designed to supplant granite and brass rolls. The largest roll said to be in use anywhere, and covered at the Griffith Mills, was installed in August at the plant of the Washington Pulp & Paper Co., Port Angeles, Wash. It is 243 inches long by 32 inches in diameter, the metal core for which, like that of the 234-inch roll supplied earlier to the Hawley Pulp & Paper Co., Oregon City, had been shipped to the Griffith Mills by the Beloit Iron Works, Beloit, Wis. Ad-

vantages of such rolls are said to be saving of felts, speeding up of production, and 50 per cent reduction in first cost.

General Tire & Rubber Co., Akron, O., has recently negotiated through Western District Manager Dan A. Kimball, San Francisco, Calif., a transaction with the Van Fleet-Durkee Co. whereby the latter concern, which operates over a hundred service stations on the Coast, will distribute General tires solely.

Hood Rubber Products Co., 450 Ninth St., San Francisco, Calif., representing the Hood Rubber Co., Watertown, Mass., has, according to Pacific Coast District Manager J. J. O'Connor, been enjoying a good share of business in tires, tubes, battery jars, rubber footwear, heels, and other goods, 1929 sales thus far being well above those for the corresponding period in 1928.

Franz Foundry & Machine Co., Akron, O., is meeting with much success in the operation of its new coast plant at 726 E. 60th St., Los Angeles, Calif., according to Manager Wm. Franz. It is continually installing new machinery from Akron and has been providing much of the equipment required for tire-factory expansion in Los Angeles. The output includes tire molds, cores, rings, repair apparatus, etc. President C. W. Franz, of Akron, visited the plant late in August.

Pacific Goodrich Rubber Co., Los Angeles, Calif., gave a picnic to its staff and employes Saturday, Aug. 10, at Brookside Park, Pasadena, over 2,000 being present. On the same day in Akron the employes of the great parent Goodrich plant also picnicked. Production of tires at the Los Angeles plant still keeps well above 5,500 a day, with a rising tendency. There is much talk of the company soon taking on the manufacture of rubber footwear and mechanical goods, but officials do not expect any developments in that direction for a year or more. The company is known to have planned the factory to make ultimately other articles than tires. H. S. Wheeler, who has been on the Goodrich sales force for sixteen years, has been appointed as Pacific Coast division manager of the truck and bus tire department.

J. Wright Ihlenfeld, Los Angeles branch manager for the American Rubber Mfg. Co., Oakland, Calif., is taking a vacation in the Canadian Rockies.

Firestone Tire & Rubber Co. of Calif. is much ahead of its construction program. The practical doubling up of its big factory in Los Angeles, Calif., will be accomplished well before the end of the year, according to the engineers in charge of the building operations. Meanwhile production continues to increase from week to week and, even before the new additions are ready to be used, it is said that the output will be considerably ahead of the large quota set for 1929. The Xylos Rubber Co. reclaiming plant, a Firestone subsidiary, which adjoins the tire works, is operating almost to capacity and producing not only standard stock but also many varieties to meet special requirements of customers.

Goodyear Tire & Rubber Co. of Calif., despite the fact that it had largely anticipated trade needs by turning out an exceptionally large number of tires and tubes in the early summer, still kept its plant in Los Angeles running three shifts a day during August and with a daily production of tires well over 12,000.

The Cactus Mfg. Co., 914 E. 59th St., Los Angeles, Calif., celebrated its seventh birthday by incorporating under the laws of California, with its founder, C. J. Evans as president and general manager. A small amount of outside capital was injected into the business, the first since its inception. The company covers California and Arizona with nine salesmen, who carry the merchandise with them and deliver from "the wagon." Distribution elsewhere in the United States, Canada, and numerous foreign countries is through jobbing connections. Cactus boots and patches are pioneers in their field. The Cactus Mfg. Co. also manufactures and distributes other automobile accessories under the trade mark of "Kaktus Kid."

Obituary

Joseph E. Hubinger

JOSEPH E. HUBINGER, president of the Yale Tire & Rubber Co. and the Eastern Machine Screw Co., died at his home in New Haven, Conn., on July 30. He was 71 years old. Hubinger, born in Madison, Ind., came to New Haven in 1882 and went into business with his brothers. In 1897 he was appointed to the Board of Police Commissioners and later became its president. He was president of the old People's Bank & Trust Co. and a director in the New Haven Bank.

He leaves a son, Joseph, Jr.; a daughter, Mrs. Alexander B. Timm; and three sisters, Mrs. John Nodler, Mrs. Elizabeth Green, and Mrs. Annie Keltz.

Rubber Y Exercises Teeth

Dentists say that much tooth decay is due to lack of tooth exercise. We do not bite and grind hard and often. As we do not have enough coarse food, we must get tooth and gum development in some other way. To provide tooth, gum, and jaw exercise, Dr. Charles B. Finley, 41 N. Madison Ave., Pasadena, Calif., has invented a mouth developer made of almost pure gum. It is nearly Y-shaped and is slit to allow it to fold lengthwise and be inserted easily in the oral cavity. Just as doing one's daily dozen helps health, regular chewing on this device is said to eventually make the teeth very sturdy. Golden State Rubber Mills, 1920 E. Vernon Ave., Los Angeles, Calif.

Less Autos Bought on Instalments

According to statistics issued by the American Motorists Association and the Automobile Club of Illinois, the purchase of automobiles on time has decreased since 1926.

Credit sales on new cars last year were 10 per cent smaller than in 1926, when 68.2 per cent of all new cars were sold on time payments, the report stated. However, in the past four years there has been only a 2 per cent decrease in the percentage of used cars bought on the instalment plan. Last year's figure was 60.8 per cent as compared to 62.8 per cent for 1925.

Of each 1,000 instalment sales, an average of 4.7 persons absconded last year.

Schrader Contest Winners

Winners in the $1,000 display contest conducted by A. Schrader's Son, Inc., valve and gage manufacturer, Brooklyn, N. Y., have been announced. First national honors went to the Menomonee Falls Tire & Battery Shop, Menomonee Falls, Wis., which received $250 in cash. The second national prize, an award of $100, went to E. S. Burgan & Son, Spokane, Wash., and the third, a prize of $50, to the Western Auto Supply Co., Memphis, Tenn. In determining the winners the judges considered originality, selling power, and tasteful arrangement.

In addition to the three national awards, three prizes were awarded in each of seven territories comprising the trans-Mississippi, Pacific Coast, New England, Central, Southeastern, and Middle Atlantic states and Canada. There were also honorable mention awards of $5. Checks totaling $1,035 have been mailed to the winners.

Southwest Gets New Willard Battery Factory

The Willard Storage Battery Co., Cleveland, has decided to build its coast factory, not in Oakland, which had been given primary consideration, but in Los Angeles, which the company believes will better serve its requirements. The plant including equipment, will cost a million dollars, according to President R. C. Norberg. One of the many advantages cited is the saving to consumers of the present heavy freight charges from the Midwest plant.

The new factory will be built at the intersection of E. Ninth and Gerhardt Sts., and adjoining the works of the Pacific Goodrich Rubber Co. It will conform to regular battery practice in being one-story high, of brick and steel, with an attractive facade. Daily capacity will be at least 2,000 hard-rubber cased separator batteries.

CANADA

No recent change occurred in the rubber situation nor is any forecast by authorities in the rubber-shoe industry. No interest in rubber footwear exists at this time of the year, and this season, because of the long spell of very dry weather, offers less than usual. Deliveries of fall stocks of low rubbers have been made, and this business will no doubt pick up about the usual time.

At a season when sales of garden hose usually decline with heavy business over for the year, a sales movement, wider than usual, takes place this year. The prolonged spell of hot weather makes the use of garden hose necessary. July and August business to date in stores featuring garden hose has been very good, and a fair movement of garden lawn hose continues despite the fact that only one more month of summer is left. The prices remain unchanged.

This summer's dry weather has been appreciated in many countries, and some industries and trades have prospered by it, but not the waterproof garment trade. The English manufacturers of those garments say that the present season is the worst in a score of years. Quite apart from the weather, however, the manufacturers are troubled because the cheap, lightweight, single-texture cotton waterproof garment has succeeded in public favor a heavier, more serviceable, and more expensive raincoat. The result is that even if the manufacturers maintain their volume of output, they have only half the revenue and profit.

Miner Rubber Co., Ltd. Granby, P. Q., recently issued attractive advertising material in the form of suitably illustrated, colored, nursery-rhyme blotters bearing appropriate parodies of familiar rhymes. These parodies are not only in English but in French with popular French Canadian nursery rhymes.

Canadian General Rubber Co., Ltd., Galt, Ont., has just begun a national advertising campaign featuring Aristo rubber products.

Kaufman Rubber Co., Ltd., officials, Kitchener, Ont., are busy with business trips. A. R. Kaufman, accompanied by Mrs. Kaufman, has returned from abroad; while J. E. Hill, of the head office, is off to the Coast.

Dominion Rubber Co., Ltd., Montreal, P. Q. The important changes in this organization, outlined in the August issue of India Rubber World, as announced by W. A. Eden, president, have special interest for the eastern provinces since Nova Scotia, New Brunswick, Prince Edward Island, and Quebec are now combined to form the new Eastern Division of the company. The new plan involves changes and promotions in Eastern Division personnel. Col. A. E. Massie, after many years of service as district manager at St. John, N. B., is relieved of routine duties and will thus be free to serve in a general advisory capacity. H. L. Crocker, of St. John, is moving to Montreal as sales manager of tires for the Eastern Division, and M. E. Nixon will be stationed in St. John as service manager of warehouses and shipping. A. E. Morrissette is promoted to sales manager of footwear for the Eastern Division. A. L. Blanchard is the new sales manager of mechanical goods for the Eastern Division, and A. A. Dalzell is to be branch service manager in charge of distributing branches in the Eastern Division.

The Dominion company now makes a new tennis tape of specially selected duck treated on both sides with a rubber solution that is popular this season with the sporting-goods trade.

J. R. Dunlop returns to Calgary, Alb., as branch manager of the Alberta and eastern British Columbia territory of Columbus Rubber Co., Montreal, Ltd. Mr. Dunlop had been connected with this firm up to a year ago as salesman in the Calgary district.

Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont. For the first time in the history of aviation in Canada, the air was employed in connection with athletics when the huge Firestone monoplane flew with the entire Firestone baseball team from Akron, O., to Hamilton for an international good-will game with the Osler team of Toronto. The huge tri-motor plane made the 300-mile trip in 2¼ hours. After the Firestone team disembarked, the plane flew to Toronto to pick up the Osler team and bring it to Hamilton. The teams played at Scott Park before a large crowd. The Oslers were returned to Toronto. The next day the Firestone team flew to Toronto where they were accorded a civic reception. These flights are the first for any athletic team in Canada and also the first international ones.

Goodyear Tire & Rubber Co., Ltd., New Toronto, Ont. The latest additions to the Goodyear pneumatic-truck-tire group are the dump truck type, a special tire for use in excavating and building operations, also the new Goodyear all-weather heavy-duty truck-bus pneumatic. Because of the increasing use in Canada of trucks for high-speed work and long-distance hauling, a new addition to Goodyear repair materials has been made, a special line of pneumatic-truck-tire repair material which is particularly suited for this work.

Traveling in eighty-six Gray Coach Line busses, 3,010 guests of the Goodyear Recreation Club's ninth annual picnic were recently transported to Oshawa Beach. 406 private cars of Goodyear employes carried 1,602 people, making a grand total of 4,612. It was the largest gathering that ever attended a Goodyear picnic and was also the largest single motor-bus movement of passengers ever handled anywhere. This was the fourth year that Goodyear employes have chartered busses for their picnic.

Perfection Rubber Co., Ltd., Lachine, P. Q., is a new concern among automobile-tire advertisers in current newspapers. Large spaces in dailies are announcing "The Finest Tire Ever Built. A Product of Canada."

Canadian Goodrich Co., Ltd., Kitchener, Ont., has announced the following appointments: H. L. Hill represents Goodrich in Windsor, Ont., and vicinity. P. J. McGail covers Southeast Sask., working out to the Regina branch. C. E. Simpson is assigned to the Winnipeg, Man., territory.

The Montreal office and warehouse of the Goodrich firm, formerly located at 755 Vitre St. W., have been removed to 940 Inspector St.

Gregory Tire & Rubber Co., Port Coliquam, B. C. Coincident with a change of management this firm will issue $150,000 in bonds for a ten-year period at 6 per cent. The bonds will be offered at 99 to yield 6.10 per cent. Interest will be payable half-yearly. Net earnings for the last fiscal year were in the neighborhood of $25,000, an improved showing compared with the previous year. Since the reorganization in 1926, approximately $35,000 have been spent for new machinery and equipment. Fraser Jamieson, who has been general manager, will be succeeded by E. A. Riddell, a director. Installation of new equipment and a more aggressive sales policy are also planned.

The Gregory company recently gave its employes their annual picnic. Members of the Vancouver office and warehouse staff joined the outing. The party traveled by motor coach and private cars from the factory to Port Moody, where a steamer took the crowd by river to Wigwam Inn. A. G. Murphy, as secretary of the picnic committee, was responsible for the success of the arrangements.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., reports an ever-increasing demand for the Hole in-One Trophy which it donates to any golfer making a hole-in-one with a Dunlop "Maxfli" golf ball this season. In addition to this article serving as a suitable reminder of the lucky occasion, it preserves the actual ball used and fills the need for a handy desk ash-tray.

Sir Eric Geddes Visits United States and Canada

Right Hon. Sir Eric Geddes, noted British war statesman and chairman of the Dunlop Tire & Rubber Corp. of America and the Dunlop Tire & Rubber Co., recently visited the Toronto plant and Montreal branch of the Dunlop Tire & Rubber Goods Co., Ltd. Sir Eric is also chairman of Imperial Airways, Ltd., which has a high reputation for reliability and is also responsible for the weekly air service between London and Karachi, India.

The Rubber Industry in Europe

GREAT BRITAIN

World's Rubber Stocks

The *Financial Times* publishes a table compiled by Henry Gardner & Co., showing the world's rubber stocks at the end of each month from June, 1928, to June, 1929, inclusive.

London stocks decreased rapidly until they stood at the comparatively low figure of 16,855 tons in November, 1928, only to rise again to 31,539 tons in May, 1929. A slight drop thereafter brought the amount to 30,982 tons in June, 1929, as compared with 38,611 tons in June, 1928. The Liverpool figures were fairly steady and in November they were 2,213 tons; from then on a rapid rise is observed so that by June, 1929, the stocks are 4,628 tons, against 2,335 tons in June, 1928; in other words, Liverpool stocks have just doubled in the course of a year.

The United States stocks took a similar course to that of London, reaching the minimum of 61,957 tons in November; but by April, 1929, the stocks stood at 107,659 tons, instead of 90,198 tons as in June, 1928. May and June showed decreases, so that in the latter month stocks were less than 2,000 tons above those of June of the preceding year

The total stocks of raw rubber throughout the world came to 262,866 tons in June, 1928; the minimum figure was 237,808 in October, 1928, and the maximum 279,233 tons in February, 1929. In June, 1929, the totals read 258,568 tons.

Planters' Society

The rubber industry is now at the turning of the ways, said Mr. P. J. Burgess at the Sixth Annual Dinner of the Incorporated Society of Planters held at the Piccadilly Hotel, London, on June 28, 1929. The new methods employed on the plantations which may eventually lead to yields of 1,500 pounds per acre instead of the 300 to 400 pounds which are now the average output per acre, open up a big vista of what the future may be capable of, he stated. With such productions per acre and consequent lowering of costs rubber may in the not-too-far-off future be selling at 6 pence a pound, and this fact would alter conceptions of what can be done with rubber. Price of the raw material would no longer hamper those who wished to use rubber on a large scale. In connection with transportation and speed, he said that in time distances might be considered rather from the point of view of time than of yards and miles, and all this would be due to rubber.

Sir George Maxwell, ex-chief secretary, Federated Malay States, also touched on the matter of transportation. He asked whether there was not some vehicle which could operate on undeveloped roads, suggesting that the Colonial office find out what kind of slow, light transport was required. Such vehicles would be the means of saving large sums now spent on railways and roads in undeveloped tracts.

Universal Rubber Paviors

The first ordinary general meeting of the Universal Rubber Paviors, Ltd., was held recently in Manchester, and it appears that the financial results were not so satisfactory as expected, judging from the success of the paving with Gaisman blocks in New Bridge St.

The chairman said: "We claim it to be the first successful rubber paving laid in streets with so complete a range and intensity of traffic on a scale large enough to test its 'non-creeping' qualities. It is also the first rubber paving laid under a contract of maintenance with the local authority concerned, and it is the first section of street paving laid in this country where the rubber manufacturing company has laid the road and made itself responsible for its maintenance."

The concern has just completed the manufacture of 1,000 square yards of the New Bridge St. block for a northern town and it is expected to lay these blocks very soon.

Pirelli Tire Factory

The new Pirelli factory at Burton-upon-Trent is situated on a site covering 60 acres, and is said to be one of the most efficient tire factories in England. The present buildings are designed to produce 2,000 tires daily, and approximately 1,500 people will be employed, practically all of whom will be drawn from the neighborhood. Quite recently, the Prince of Wales visited the works and showed much interest in the various processes. Besides this factory, the Pirelli company has two others in England, one at Southampton and the other at Eastleigh, where electric cables are manufactured.

GERMANY

Progress in Rubber Industry

Germany expects soon to rank second in the world's rubber industry, having made considerable headway since the war, and is rapidly regaining the ground lost during the war. Regarding the place she now occupies, Walter Lindemann, manager of the National Association of the German Rubber Industry, answered in a paper read before the third general meeting of the Deutsche Kautschuk Gesellschaft held in Hannover in May.

A reliable indication of Germany's position, he considered, was the consumption of crude rubber during the last few years. In 1925 the imports of raw rubber were approximately 36,100 tons; in 1926 this dropped to 25,000 tons, only to jump to 42,560 tons in the following year; 1928 saw a slight decrease to 42,390 tons. But on the basis of imports for the first quarter of 1929, 14,600 tons, an increase of 13 per cent over 1928 and of 42½ per cent over 1927, 1929 may be expected to show a further advance. Incidentally, the 1913 imports of crude rubber into Germany were about 20,500 tons.

If the figures of the London firm, Hymans Kraay & Co., for the world's consumption of rubber in 1928 are used, namely 672,000 tons, German consumption for that year approximates 6½ per cent of the total. According to these English figures, German imports were not 42,390 tons in 1928, but about 38,000 tons, which Mr. Lindemann points out is erroneous. But even so Germany ranks as third largest consumer of rubber, the order being as follows: United States, 441,000 tons; Great Britain, 49,000 tons; Germany, 38,000 tons; France, 36,000 tons; Canada, 31,000 tons; Japan, 26,000 tons; and Italy, 12,000 tons.

Mr. Lindemann thinks the time not far off when Germany will take the place of England as the world's second largest consumer of raw rubber. He adds that Germany's importance as a consumer of rubber should be impressed upon England and Holland, the countries most concerned in the production of rubber, because the purchase of raw materials is not less important that the purchase of finished goods or agricultural products, which nevertheless always play a far bigger part than raw materials in commercial treaties.

The speaker pointed out that Germany's imports and exports of rubber manufactures represent now 1¼ per cent of the country's total foreign trade. He further calculated that Germany spends about 1,000,000,000 marks, or more than 3 per cent, on rubber goods, for the value of the country's total consumption of all manufactured goods is about 32,000,000 marks.

With the rubber industry so important in Germany, adequate statistics are neces-

sary, but unfortunately no regular production and sales data for the entire German rubber industry are available. The government statistical bureau publishes figures about tire production, but their usefulness is limited because they appear only once a year, whereas figures for the entire industry should be published every month. Efforts of his association, said Mr. Lindemann, to effect frequent and regular publication of complete production statistics for the rubber industry had so far been vain.

Import and Export Figures

The following are official statistics for the export of manufactured rubber goods for the years 1926-1928 and for the first quarter of the current year:

Year	Weight in Tons	Value in Marks
1926	16,800	107,000,000
1927	17,400	113,000,000
1928	19,700	125,000,000
1929, first quarter	5,400	33,000,000

These figures show a steady yearly increase, and in 1928 pre-war totals were practically reached. By calculating the 1929 totals on the basis of the figures for the first quarter, it is expected that during the current year 1913 totals, which were 20,500 tons, value 135,000,000 marks, will be more than realized.

Imports have risen at an even more rapid rate, if 1913 figures are taken as the basis of comparison. In the latter year, Germany imported rubber goods to the amount of 4,300 tons, valued at 25,000,000 marks. In 1926, the figures were roughly 3,600 tons, value 19,000,000 marks; in 1927, 6,300 tons, value 40,000,000 marks; in 1928, 6,850 tons, value 39,000,000 marks; and in the first quarter of 1929, 2,100 tons, value 11,000,000 marks.

Duties

A discussion of imports and exports naturally leads to commercial treaties. Mr. Lindemann complained that because of a certain one-sidedness in commercial treaties, the German rubber-export industry faces a practically insurmountable tariff barrier. Yet duties in Germany are comparatively low, and foreign countries have ample opportunity to flood the German rubber goods market. In illustration, Mr. Lindemann cites the following duties on goods in certain European countries and in Germany.

DUTY PER 100 KILOS

	In Foreign Countries	In Germany
Belting	Hungary 170 marks	60 marks
It packing	Hungary 127 marks	60 marks
Toys—balls, animals, dolls	France to 330 marks Czechoslovakia 149 marks Hungary 405 marks Poland 5,404 marks	20 marks
Football bladders	France 413 marks	80 to 120 marks
Unfinished hard rubber shapes	Austria 85 marks	10 marks
Hard rubber rods	France to 124 marks Poland 403 marks	10 marks
Hard rubber combs	France 107 marks Hungary 466 marks	45 marks

Finally Mr. Lindemann, quoting figures collected by the Reichsverband der Deutschen Kautschuk Industrie, showed that whereas the membership of this association in 1926 included 92 rubber factories employing 29,148 factory hands (18,586 men and 10,562 women), besides 6,726 persons at the commercial and technical end, making in all 35,874 employes, by 1929 the policy of concentration that the German industrialists have been pursuing for the last few years had reduced the number of factories to 75, while the number of employes had increased to 41,802, including 21,597 male factory workers, 13,507 female workers, and 6,698 commercial and technical assistants. He once more called attention to Germany's threatening England's position as second in the world's rubber industry when he pointed out that the number of people employed at present in the German and English rubber industries is practically similar.

New Patent Laws

If the new provisions relating to patent laws now before the Reichstag should come into effect, several changes will have to be considered by those taking out patents in Germany.

It is planned to reduce the time limits of prior publications where the novelty of an invention is to be examined. The patent laws formerly placed the limit at 100 years, but the proposed new law would require prior publications produced in any proceedings seeking to examine, invalidate, contest, or revoke claims of invention to be not older than 50 years. In this way a lot of so-called paper technics, which so far has tended to obstruct an inventor in his efforts to obtain protection, will be removed.

Another clause would automatically lengthen the duration of a patent by requiring the time to be calculated from the day after publication of the application and not, as is now the case, from the day after application. Furthermore, it is intended to increase the term for design patents and the period of renewal of these patents to five years respectively.

The new law would rule that if a patent has lapsed but is again reinstated and once more is considered valid, persons who have in the meantime exploited the invention in good faith, may continue to do so on paying the patentee for a license.

The contemplated changes may soon have to be taken into consideration, for if the new laws go through, they will become effective from October 1, 1929.

The Tire Convention

It is reported that the Cartel arbitration has declared a boycott against Englebert, the Belgian tire manufacturing firm. This concern did not this year join the convention made by the German tire dealers and manufacturers. The Englebert concern had entered into a large number of contracts toward the end of last year and the first half of the current year, and had made its adherence to the convention conditional on being permitted to uphold and renew these contracts. The Cartel arbitrators ruled that while it was unfair to expect Englebert to cancel the existing contracts, it was also unfair to expect the firms adhering to the convention to take the Englebert firm and its contracts into the convention.

RUSSIA

That statistics for industrial progress in Russia must be carefully scrutinized even when they are official, is the opinion of a correspondent in a recent issue of *Gummi-Zeitung*, who appears to have an intimate knowledge of pre-war conditions in the Russian rubber industry. He criticizes many statements in an official report concerning the expansion of the Russian rubber industry during the last few years as compared to the pre-war situation.

Taking the production figures for rubber footwear, which the report gives for Treugolnik and Bogatyr as 36,248,000 pairs for 1927-28, he shows that instead of indicating an increase of 32 per cent over the 1913 output as claimed, these figures, closely examined, prove that no great headway, if any, in production has been made. The writer says that the Russian rubber industry before the war was constantly and rapidly developing. Besides, the official report neglects the fact that seven months elapsed between the end of 1913 and the outbreak of the war, and it was during that time that the footwear industry rapidly spurted forward. As early as the spring of 1914 Treugolnik had raised its daily output to 100,000 pairs, and while this figure was not long maintained, during the greater part of the time up to the war it was 95,000 pairs. At the same time Bogatyr had increased its production too, so that by July, 1914, the daily output was 20,000 pairs. Consequently the two factories were producing about 110,000 pairs per day when the war broke out. Based on the Russian working year of 285 days, that makes an annual output of 31,350,000 pairs.

Furthermore at the beginning of the war Treugolnik had practically completed expansions and installation of equipment to bring its daily output to 120,000 pairs, while Bogatyr had arranged to raise its daily production to 30,000 pairs. But for the war, the production program of the latter firm would have gone into effect by September, while the enlarged Treugolnik would soon have followed with its increase, and their combined production would have been 42,750,000 pairs annually. As the working shifts were then ten hours and are now supposed to be eight, for purposes of comparison the production is scaled down accordingly; yet the factories would still have been able to produce 34,200,000 pairs a year.

But, we are reminded, there were three other Russian factories: Prowodnik, Kautschuk, and Mundel. At the start of the war the first two were transferred to Moscow where, thanks to the Imperial Government, immense factories were built, and Prowodnik was soon equipped to produce 50,000, if not 70,000 pairs daily, which makes a minimum annual output of 14,250,000 pairs. Kautschuk was also said to have had all the necessary machinery for manufacturing rubber footwear.

The writer ends by declaring that far from advancing, Russian rubber-footwear production is less than immediately before the war in spite of even the introduction of improved manufacturing systems, which should have caused great increase.

The Rubber Industry in the Far East

MALAYA

Budgraft Production Depends on Soil Fertility

The importations of bud wood and selected needs from the Dutch neighboring islands calls to mind some correspondence in the local and English papers regarding the question of budding and ultimate yield to be expected.

In a recent issue of the *Straits Budget* appears a letter from W. Dunman who, referring to the remark made by P. J. Burgess at a meeting of the Incorporated Society of Planters regarding the possibility of obtaining yields of 1,500 pounds of rubber per acre at some future time, attempts to show that Mr. Burgess' estimate is far too conservative.

"The ultimate possibilities are not fully realized," he says. "Taking 70 trees to the acre and tapping on a third-day basis, 1 ounce per tree means 525 pounds of rubber per acre; 3 ounces per tree, 1,575 pounds per acre; 5 ounces, 2,625 pounds per acre; 8 ounces, 4,200 pounds per acre; and 10 ounces per tree, 5,250 pounds per acre. One estimate can be mentioned where a good number of trees yield 10 ounces dry rubber daily. Consequently it is reasonable to expect considerably better results than the dream of 1,500 pounds per acre!"

Against this optimistic opinion must be put that of Cyril Baxendale, a planter of many years standing and a director of rubber companies, who has recently left the East for England.

A good deal of discussion had been aroused in the rubber industry by statements in connection with yields from bud grafts made by Ormsby Gore, who held the office of Under-Secretary for the Colonies in the previous Administration in England. He pointed out in his report that theoretically it should be possible to obtain a yield of as much as 4,000 pounds per acre from budded rubber, wherein he evidently agrees with Mr. Dunman. But Mr. Baxendale stated that during ten weeks he spent between February and April of this year in Malaya and the Dutch colonies he had searched in vain for any yield from bud grafted trees promising to exceed 1,416 pounds per acre. The maximum was from a block of 12½ acres, and the figure was based on 10 months' tapping of trees in their tenth year which had been in regular tapping for 3 years.

He agreed that amazing results could be quoted from isolated trees not bud grafted, averaging 83 pounds for several years in succession. But, he added, it was difficult to imagine 50 such trees finding sufficient space or nourishment on an acre of land to produce 4,000 pounds of rubber.

"Mr. Gallagher, whose experience of bud grafting is probably unrivaled," he said, "reminds us that however much we may improve the latex vessel of the tree, the productivity of the soil must set a limit on output."

Mr. Baxendale seems to have hit the nail on the head. However, it may be argued that artificial manuring will make up for the natural deficiency of the soil. But there would still be the question as to what the effect of excessive manuring would be on the inner qualities of the rubber, granting that suitable manuring would produce the desired results in regard to yield.

The Future of Rubber From a Different Angle

The future of rubber was discussed from a different angle by R. F. McNair Scott at a meeting of the Anglo-Java Rubber & Produce Co., Ltd. He stated that as America was the biggest consumer, the action of producers was largely influenced by what they thought America would be likely to do, and they were apt to overlook the fact that economic conditions in Europe were gradually being restored. It is forgotten by many that Europe has a population four times as big as that of America; that the total rubber consumption of the European countries before the war was above that of America; that the car industry, held back by the war, is going forward by leaps and bounds in Europe. He pointed out that whereas in 1927 American consumption was 75 per cent of the world's production, it is now about 62 per cent, in spite of the fact that America's rubber requirements during 1928 and up to June of this year increased to an unexpected degree. That seems to indicate that before long the consumption by the rest of the world may soon equal that of America in spite of increased consumption in the latter country. This was very important, said Mr. McNair Scott, and other continents should no longer be disregarded.

Consumption versus Production

"Consumption has overtaken production," he went on to say and quoted figures to show that the estimated consumption for 1929 is put at 811,000 tons, or an increase of 20 per cent over 1928 figures. Production for 1929 is estimated at 780,000 tons. The free stocks in consuming countries at December 31, 1929 are put at 130,000 tons, or under two months' world consumption.

The estimated maximum output for 1930 is 800,000 tons. With regard to consumption America remains the chief buyer. Although many people think the American consumption this year is abnormal, the speaker pointed out that Firestone, Goodrich, and Goodyear have all opened new factories in America, which are expected to be in full production in 1930. So that apparently these concerns, while opening new factories in Europe, believe that they still require further facilities for supplying their home trade.

He therefore puts American consumption for 1930 at the same figure as estimated for 1929, 510,000 tons. For the rest of the world an increase of 7½ per cent is expected, so that estimated consumption for 1930 is 832,500 tons, against production of 800,000 tons, whereby the free stocks are reduced to 100,000 tons at the end of the year; considering that according to estimates the monthly consumption will be about 70,000 tons by that time, the position for the consumer is held to be dangerous.

Annual Report of the Straits Settlements

The annual report of the Colonial Secretary of the Straits Settlement for 1928, reviewing the rubber situation from the agricultural point of view, states that the standard of upkeep maintained on large plantations was not appreciably affected by the lower prices for rubber prevailing during the year. In the case of the native holdings, however, a deterioration in the general condition and a more liberal tapping program was apparent. Following the removal of restriction at the end of October, excessive tapping and a tendency to neglect sanitation and diseases became general on the small holdings.

Regarding pests and diseases, it is satisfactory to note that no material increase in virulence or distribution was recorded by the Agricultural Department, nor were there any new diseases to report. A long period of dry weather in the first half of the year effectively checked the development of the more important fungi which attack the tapped surface and the branches of rubber trees, but with the advent of the rainy season appeared a severe and widespread outbreak of moldy rot in the Straits Settlements during the latter half of the year.

A circumstance worthy of note is that very considerable quantities of bud wood and smaller quantities of selected seeds were imported throughout the year from Java and Sumatra, and is sufficient evidence of the fact that companies in Malaya are not content to remain behind the Dutch colonies in respect to breeding high-yielding rubber trees and are making strenuous efforts to develop their properties along up-to-date and scientific lines.

Company Notes

Sandycroft Rubber Co., Ltd. at a recent meeting the chairman discussed a joint planting scheme. The Sandycroft is one of the oldest estates in Malaya. During the past 23 years it has turned out an average of 36 per cent in dividends, but the trees are now getting old and in some cases are no longer so good as they should be. The firm is unable to get suitable land in the vicinity of the estate and in order to replace their old rubber with new the only other course would be to look further afield. A few years ago an attempt was made to replant a small area but owing to the poor condition of the soil the experiment was not a success.

The concern has not sufficient funds to take up elsewhere an area of land sufficiently large to be an economical proposition. There are a number of other rubber companies that find themselves in a similar position, and the chairman thought it would be desirable if the Sandycroft estate joined some of these companies in some scheme under which an area of land of 3,000 to 5,000 acres could be acquired and jointly opened up and gradually planted along the most approved scientific lines with proved high-yielding stock. Such a scheme has already been informally discussed by directors of certain companies and is likely to mature.

Lenggeng Rubber Co., Ltd. at a general meeting of the company an agreement dealing with the acquisition of the Benar (Selangor) Rubber Estate, Ltd., was considered. In explaining the proposition the chairman said that the expenses of both companies would be considerably reduced by such a transaction, so that both estates should be able to show a larger profit per pound and per acre. At the conclusion of some discussion in this connection a decision in favor of the acquisition of the Benar Estate was made.

NETHERLANDS EAST INDIES

Planters' Congress

On June 19, 20, and 21 the meetings of the Planters' Congress of the Soekaboemi and Rubber Planters' Association took place in Bandoeng. Among those present were: the Director of Agriculture, Industry, and Commerce, Dr. Ch. J. Bernard; the President of the Agricultural Syndicate, Prof. G. van Iterson; and the Director of the Rubber Experiment Station, Prof. O. de Vries.

Interesting papers were read on a variety of subjects including one on the "Periodicity in the Growth of *Hevea Brasiliensis*," by D. van der Hoop.

Mr. van der Hoop has carefully studied the periodicity or as he calls it, the life rhythm, of *Hevea Brasiliensis*, and has collected a large quantity of data in this connection from which he draws important conclusions. Studying the periodicity or life rhythm of Hevea opens up the following possibilities, according to the speaker:

Each individual Hevea tree lives according to a certain periodicity or life rhythm. This life rhythm can to a certain extent be inherited by its seedlings, and also by the buddings. The differences in life rhythm can be utilized in budding and also in pollination and planting in various soils and in different climate. The natural cross-pollination is strongly influenced by this life rhythm.

The important part that periodicity plays in the growth of Hevea is fully explained by many interesting details. Thus it is shown that every clone has its own periods of maximum and minimum growths and developments with rest periods in between. This is particularly important in connection with cross-pollination. For it might very well happen that at a given period pollination between certain groups could not take place, whereas at another period this would be possible.

But this is not all. It is to be expected that the flow of latex and the yield of rubber is just as much influenced by the new development that takes place in all parts of the plant in a period of active growth, and there seems to be every reason to believe that a part of the movements in the latex flow is due to periodicity. This deserves to be studied carefully for if the foregoing is correct, then it is to be expected that a special tapping system will be found for each clone that will prove to be the most economical.

The time at which wintering of trees takes place and the extent of the leaf fall is also explained on the grounds of periodicity. The character of the wintering of the trees depends on a dry period coming in between a period of growth and one of rest. When the last period of growth falls about the end of May or the beginning of June, it can be taken for granted that a tree in which this is the case will not be bare of leaves in the coming East Monsoon. If the period is still later, there is a great chance that the tree will lose its leaves very slowly and as it forms more young leaves. In both these cases, the trees probably have a short periodicity. On the other hand, complete denudation of leaves may be expected in trees with a long periodicity or when the dry period is long. After a very lengthy period of dry weather in a certain year, general, simultaneous wintering may be expected for the next year, because the period rhythm has been upset. The same thing may take place if the dry period or the rains begin early.

The Mildew Question

The question of combating mildew is drawing as much attention as the problem of brown bast did in its day. Mildew was first observed in 1918, but it was not until 1926 that it gave any cause for much uneasiness. Since then it has been gaining ground so that in Java there is today practically not a single estate that can claim to be wholly free of this trouble. Not only has the disease been spreading, but the attacks in many cases are increasing in severity. Mildew is regularly met with in South and East Sumatra, Ceylon, and Malaya, but in these territories it does not do much damage.

The indirect means consist of cultivation measures calculated to increase the resistance of the leaves to mildew, manuring with appropriate manures being the most popular method. The advantage of the indirect method is that besides helping the tree to resist the disease, it improves its general condition so far that frequently increases in yields, improved bark renewal, more rapid growth, etc., are the results of the treatment.

In the beginning of 1928 Dr. Bobilioff started a number of experiments with other varieties of Hevea. A number of *Hevea Brasiliensis* seedlings budded high with other varieties of Hevea, as *Hevea Collina, Spruceana*, etc., were planted in order to see whether these were immune to the disease, but the experiment was not successful since all the four varieties used were attacked by mildew. Similar tests have been carried out at Tjipetir. In the next mildew season new experiments will be made to see if any of these varieties show more resistance than Hevea. In addition there are still a large number of Hevea varieties that have not been tried yet and which may prove to have the desired qualities.

New Tapping Method Evolved for Buddings

In the *Archief voor de Rubbercultuur*, July, 1929, a communication from the General Experiment Station of the A. V. R. O. S., (General Association of Rubber Planters' East Coast of Sumatra), appears giving the results of tests with a new tapping system for Hevea buddings. The system was suggested by Dr. C. Heusser and tested by H. J. V. S. Holder on the Boekit Maradja estate. The method consists of two cuts on adjacent panels. The one cut is higher than the other, the distance between the two being 100 cm. The cuts are over ¼ of the circumference. When tapping is carried out on an alternate monthly system, the bark consumption amounts to 1¾ inches per month, allowing 14½ years for bark renewal.

The first test, over one year, has given very promising results. The fact that in the case of buddings the output does not depend on the height of the tapping cut to the same extent as is the case with seedlings makes it possible to obtain good yields from clones that are otherwise only moderate producers. It remains to be seen whether the best trees will stand a two-cut system without damage. Tests will also be undertaken to determine whether the distance between the two cuts will have to be still greater and whether it would be more advantageous if both panels were not tapped at the same time, but alternately, every other month or every other fortnight, for instance.

Rubber Patents, Trade Marks and Designs

Machinery

United States

1,719,984.* ELECTRODEPOSITION OF RUBBER. Rubber goods are produced by introducing the rubber dispersion between the anodic depositing molds or backings and a permeable partition shutting off the chamber containing the rubber dispersion from the chamber containing the cathode and a cathodic electrolyte. P. Klein and A. Szegvári, both of Budapest, Hungary, assignors to Anode Rubber Co., Ltd., London, England.

1,720,763.* VULCANIZER. A pair of electrically heated vulcanizing members cooperate to form vulcanizing surfaces so designed that they can be brought together to engage the article to be cured. The vulcanizer may be set to remain effective a definite length of time. It is time-controlled and automatically locked when in operation. C. T. Siebs, Riverside, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,721,252.* TAPE APPLYING MACHINE. This relates to methods and apparatus for applying adhesive strips to work pieces and for heating and applying to the seams and edges of work pieces tape coated on one side with fusible cement. R. E. Leatherbury, Jr., St. Louis, Mo., assignor to Peters Bros. Rubber Co., Inc., Brooklyn, N. Y.

1,721,253.* NONEXPANSIBLE HOSE. This provides a method and apparatus for constructing a hose in which the end portions of the hose are formed with a slightly greater internal diameter than the major portion. When the nipples are inserted and expanded in the ends of the hose, the bores of the nipples and of the major portion of the hose are uniform in diameter and only sufficient expansion of the hose is caused to effect a tight sealing. M. Loughead and D. O. Scott, assignors to Hydraulic Brake Co., all of Detroit, Mich.

1,721,298.* SOLID TIRE-TRIMMER. The object of this invention is to provide a machine by means of which excess rubber or molding overflow may be readily and automatically removed from a cured solid tire. J. I. Haase, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,721,905.* V-BELT CUTTER. This invention supplies a means for cutting in ring form V-belts adapted for use as continuous drive belts. The rubber tubes from which the belts are cut are a special composition reenforced rubber so that the belts are very tough and nonstretching. G. L. Hammond and L. H. Messinger, Jr., assignors to The Black Rock Mfg. Co., all of Bridgeport, Conn.

1,721,951.* DIPPED GOODS MACHINE. This device provides a simple method and means for preventing the formation of drops of excess material or thickened portions in the dipping process of making rubber articles. L. P. Gould, assignor to The Miller Rubber Co., both of Akron, O.

1,721,975.* TIRE TUBES. This provides a simple, economical, and easily operated apparatus which obviates the necessity of the forming cores or mandrels customarily used for inner-tube making. P. W. Sanderson, assignor to The Miller Rubber Co., both of Akron, O.

1,722,695.* SHOE LASTING JACK. This device is adjustable so that the last can be moved into a variety of positions. A last can be mounted and locked upon the jack without scratching or marring the walls of the bore in the last into which the lasting pin of the jack projects. A. Drechsler, assignor to Hood Rubber Co., both of Watertown, Mass.

1,722,697.* RUBBER BOOTS. This is an improved process for manufacturing rubber boots, comprising building a boot upon a hollow boot-tree of expandible material over which a boot lining has been drawn; then placing the assembled tree, boot lining, and boot in a heated mold until the boot is cured. A. A. Glidden and T. M. Knowland, Watertown, and H. L. Davis, Walpole, assignors to Hood Rubber Co., Watertown, all in Mass.

1,720,362. BOX MOLD. P. H. Henkel, assignor to Continental Rubber Works, both of Erie, Pa.

1,720,385. FASTENER CEMENTING DEVICE. C. W. Steele, assignor to The Miller Rubber Co., both of Akron, O.

1,720,614. TIRE REMOVER. W. H. Welch, Bristol, England.

1,720,615. TIRE-MANIPULATING DEVICE. W. H. Welch, Bristol, England.

1,721,094. TIRE REPAIR VULCANIZER. G. E. Sease, Caldwell, Idaho.

1,721,580. SECTIONAL REPAIR BAG. O. Wersen, assignor to Morgan & Wright, both of Detroit, Mich.

1,721,583. VULCANIZING BAG. A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.

1,721,838. LINING METAL PIPES. W. L. Semon, Cuyahoga Falls, and A. W. Sloan, Akron, both in O., assignors to The B. F. Goodrich Co., New York, N. Y.

1,721,842. TIRE-MAKING MACHINE. P. D. Thropp, deceased, by J. E. Thropp, coexecutor, and C. M. Thropp, coexecutrix, and L. A. Moreland, assignors to The De Laski & Thropp Circular Woven Tire Co., all of Trenton, N. J.

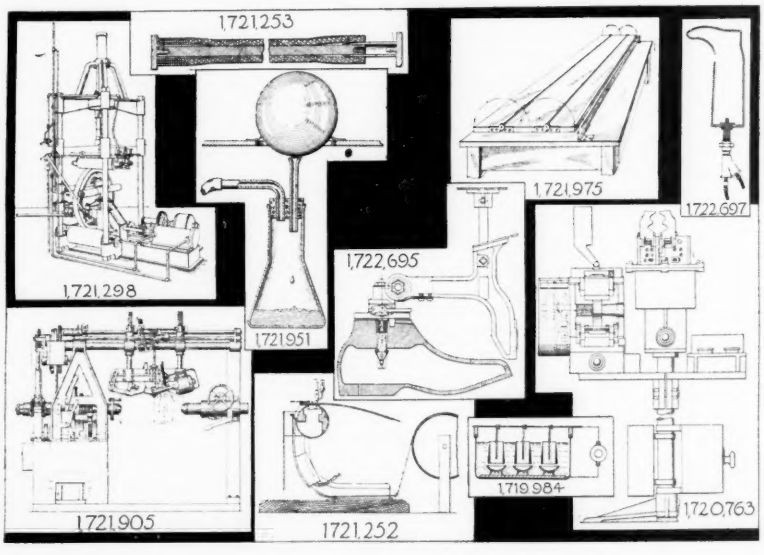
1,721,962. MATERIAL-MIXING MACHINE. R. C. Lewis, assignor, by mesne assignments, to Farrel-Birmingham Co., Inc., both of Ansonia, Conn.

1,721,965. GOLF-BALL MARKER. J. E. McGinness, Pittsburgh, Pa.

1,722,698. LASTING JACK. A. A. Glidden and A. Drechsler, assignors to Hood Rubber Co., all of Watertown, Mass.

1,722,767. PNEUMATIC OSCILLATING SYSTEM. G. H. Schieferstein, Berlin-Charlottenburg, Germany.

* Pictured in group illustration.



Dominion of Canada

291,010. RIMMING PRESS. The Goodyear Tire & Rubber Co., assignee of W. H. Campbell, both of Akron, O., U. S. A.

291,011. TIRE BUILDING APPARATUS. The Goodyear Tire & Rubber Co., assignee of J. A. Shively, both of Akron, O., U. S. A.

291,189. UPPER ASSEMBLING MACHINE. The Dominion Rubber Co., Ltd., Montreal, Que., assignee of E. L. Patten, New Haven, Conn., U. S. A.

291,396 and 291,397. KNIT GOODS APPARATUS. The Dominion Rubber Co., Ltd., Montreal, Que., assignee of C. A. Schippling, Kitchener, Ont.

Rubber Patents, Trade Marks and Designs

United Kingdom

310,629. Hot-Water Bottle Machine. Campbell, Achnach & Co., Ltd., J. Gillan, J. M. Swan, and T. Garstang, 59 Wallace St., Glasgow.

311,018. Rubber-Working Machine. J. H. Coffey, 30 Bolsover St., London.

311,507. Tire Vulcanizing Mold. Gibbons Bros., Ltd., Dibdale Works, Dudley. (C. Dressler, Rue D'aleray, Paris.)

311,753.† Tire Shaping Apparatus. Firestone Tyre & Rubber Co. (1922), Ltd., 216 Tottenham Court Rd., London, assignee of H. D. Stevens, 94 Kenilworth Drive, Akron, O., U. S. A.

311,844. Thread Making Machine. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, E. A. Murphy, and D. F. Twiss, Fort Dunlop, Birmingham.

311,854. Tire Remover. G. E. Weaver, 1100 Woodland Ave., Springfield, Ill., U. S. A.

France

655,095. Pulverizer of Waste. H. P. Bonissent.

656,277. Machine for Circular Objects (tires, etc.). V. Hardy and A. Neef.

657,783. Rubber Shoe Machine. Aktieselskabet Dansk Pressefabrik.

658,565. Alinement Device. The Dunlop Rubber Co., Ltd.

658,677. Retreading, Repairing Apparatus. The Dunlop Rubber Co., Ltd.

658,719. Device Producing Repair Patches. The County Chemical Co., Ltd., and M. B. J. Weldon.

660,815. Vulcanizing Presses. C. Macbeth.

Germany

480,125. Tube Powdering. A. Knoevenagel, Huttenstrasse 21, Hannover-Hainholz.

480,491. Vulcanizer. F. Kempter, Heinestrasse 10, Stuttgart.

Designs

1,079,145. Grinding Machine. C. E. Gardner, Gloucester, England. Represented by N. Neubart, Berlin S. W. 61.

1,079,748. Tire-mounting Tool. O. Voss, Neuer Weg 70, Krefeld.

1,079,811. Tire-Inflating Device. C. Dickert, Weiler b. Ebersbach-Fils.

1,080,013. Shoe Vulcanizer. H. Drechsel, Possneck i. Th.

Process

United States

1,720,594. Toy Balloon Coloring. J. C. Gibson, assignor to The Pioneer Rubber Co., both of Willard, O.

†Not yet accepted.

1,722,967. Leather Shoe Manufacture. W. C. Bennett, Hingham, and A. B. Miller, Cambridge, assignors to Bennett Box Co., Boston, all in Mass.

1,722,968. Resilient Flexible Sheet. W. A. Boughton, Cambridge, assignor to Bennett Box Co., Boston, both in Mass.

Dominion of Canada

291,311. Rubber Manufacture. W. A. Boughton, Cambridge, Mass., U. S. A.

291,399. Electro Dispersions. The Dunlop Rubber Co., Ltd., London, N. W. 1, assignee of D. F. Twiss, Birmingham, Co. of Warwick, both in England.

291,614. Hot Vulcanized Article. I. and L. Dorogi, Budapest, and Dr. Dorogi es Tarsa Gummigyar R. T., Budapest-Albertfalva, assignee of half of the interest, all in Hungary.

United Kingdom

310,602. Hollow Article Manufacture. C. Macintosh & Co., Ltd., S. A. Brazier, and G. F. Thompson, 2 Cambridge St., Manchester.

311,982. Embossing Leather. C. Macintosh & Co., Ltd., S. A. Brazier, and A. B. Hatton, 2 Cambridge St., Manchester.

Germany

480,126. Cutting Rubber. T. J. Mell, Akron, O., U. S. A. Represented by G. Benjamin and H. F. Wertheimer, Berlin-Charlottenburg.

France

655,229. Tires. S. Servera.

655,377. Securing Soles. F. Nielsen.

655,861. Attaching Soles. A. Kempf.

656,473. Rubber Manufacture. Societa Italiana Pirelli.

657,364 and 657,404. Molded Goods. The Anode Rubber Co., (England), Ltd.

658,388. Producing Hollow Goods. Vereinigte Gummiwaren Fabriken Wimpassing vormals Menier J. N. Reithoffer.

660,669. Producing Repair Patches. P. F. M. A. Fontana.

Chemical

United States

1,719,920. Accelerator. A polysulphide of a thioamine. C. W. Bedford, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,719,930. Composite Product. Material for bonding rubber to metal. H. Gray, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,719,948. Adhesive Composition. An aqueous dispersion of rubber containing an emulsion of a resinous polymerization product of a coal tar distillate containing cumaron resin. M. C. Teague, Elmhurst, assignor to General Rubber Co., New York, both in N. Y.

1,720,533. Floor Covering Composition. J. C. Wichmann, Los Angeles, Calif., assignor to Cactus Rubber Co. of America.

1,720,716. Surfaced Paper. A liquid finishing material including rubber latex, colloidal clay, and other sizing or surfacing materials. G. F. Blombery, Lane Cove, near Sydney, N. S. W., Australia.

1,720,747. Water and Flame Proof Material. A composition containing 75 parts ammoniacal rubber latex solution containing about 30 per cent rubber, 300 parts triammonium phosphate solution of about 25 per cent strength, and 1 part ammonium polysulphide. F. L. Roman, Chicago, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,721,057. Accelerator. Ditolylguanidine. W. Scott, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

1,721,930. Coating Composition. A nonaqueous solution of rubber in an organic solvent. C. M. Stine and C. Coolidge, assignors to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

1,721,931. Coating Composition. A nonaqueous solution of rubber in an organic solvent. C. M. Stine, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

1,722,553. Adhesive. A composition comprising caoutchouc latex, tapioca meal, and lime. A. Biddle, Trenton, N. J., assignor to United Products Corp. of America, a corporation of Del.

Dominion of Canada

290,989. Rubber Coated Fabrics. Comprising an outer coat of drying oil-pyroxylin composition different in color from that of the rubberized fabric. Canadian Industries, Ltd., Montreal, Que., assignee of A. N. Parrett, Wilmington, Del., U. S. A.

290,995. Rubber Dispersion Compound. Carborundum Co., assignee of R. C. Benner, both of Niagara Falls, N. Y., U. S. A.

290,996. Bonded Abrasive Articles. A vulcanized mixture of abrasive particles in rubber curd. Carborundum Co., assignee of H. C. Martin, both of Niagara Falls, N. Y., U. S. A.

291,007. Liner Treatment. A coating of material containing nitro-cellulose and an ester of phthalic acid. The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

291,009. Accelerator. The Goodyear Tire & Rubber Co., assignee of J. Teppema, both of Akron, O., U. S. A.

291,012. Preservation for Airbags. Glycerine and a thickening agent is placed within the bag. The Goodyear Tire & Rubber Co., assignee of C. Van Rennes, both of Akron, O., U. S. A.

291,195. Synthetic Rubber. I. G. Farbenindustrie A. G., Frankfort-on-Main, assignee of H. Lecher, Leverkusen Rhine, and O. Ripke, Elberfeld, all in Germany.

291,410. Accelerator. The reaction product of a mercaptan and a substitution product of ammonia. The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

United Kingdom

310,302. LATEX MOLDING. L. Mellersch-Jackson, 28 Southampton Buildings, London. (Naugatuck Chemical Co., Naugatuck, Conn., U. S. A.)

310,461.† UNITING RUBBER TO METAL. The Goodyear Tire & Rubber Co., Akron, assignee of L. B. Sebrell, Cuyahoga Falls, both in O., U. S. A.

310,871.† ACCELERATOR. Secondary aromatic amines. The Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.

311,104. RUBBER BRAIDED ARTICLE. Carborundum Co., Ltd., Trafford Park Road, Manchester. (Carborundum Co., Niagara Falls, N. Y., U. S. A.)

311,151. COMPOUND TRANSPARENT SHEET. Glass and cellulose united with rubber solution. G. E. Heyl, 36 Victoria St., London.

311,268.† RUBBER DISPERSIONS. Vulcanized rubber is regenerated and dispersed in water. K. D. P., Ltd., Finsbury House, Blomfield St., London, assignee of Metallges. A. G., Frankfort-on-Main, Germany.

311,372.† VULCANIZATION with selenium compounds. I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

311,381.† SYNTHETIC RUBBER. I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

311,735.† ACCELERATOR. Examples are para or ortho-tolyl-amino-imidazoline or non-substituted aryl derivatives thereof. I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

311,766.† COATING RUBBER WITH METAL. M. Ow-Eschingen, 5, Stanislausgasse, assignee of H. Paweck, both of Vienna.

311,930. RUBBER PRESERVATIVE. A condensation product of an aldehyde other than a polyhydroxy aldehyde, etc. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, A. E. T. Neale and F. Thomas, both of Fort Dunlop, Birmingham.

France

654,809. AQUEOUS DISPERSIONS. The Anode Rubber Co. (England), Ltd.

655,020. SPONGE RUBBER. R. J. Noar.

655,217 and 655,456. ARTIFICIAL RUBBER. I. G. Farbendindustrie, A. G.

655,535. AQUEOUS DISPERSIONS. The Anode Rubber Co. (England), Ltd.

655,785. SYNTHETIC RUBBER. I. G. Farbenindustrie, A. G.

656,049. ARTIFICIAL MASSES. I. G. Farbenindustrie, A. G.

656,094. MINERAL FACTICE. M. L. Camern, H. O. Langstaff, and C. J. Stapelfeld.

656,230. RECOVERING FIBROUS MATERIAL. D. F. Wilhelmi.

656,428. ARTIFICIAL RUBBER. I. G. Farbenindustrie, A. G.

656,765. TREATING LAMP BLACK. Compagnie Lorraine de Charbons pour l'Electricité.

657,584. PRECIPITATING RUBBER FROM LATEX. I. G. Farbenindustrie, A. G.

657,611. IMPROVEMENTS IN DEPOSITING. The Anode Rubber Co. (England), Ltd.

657,807. IMPROVED VULCANIZATION METHODS. American Cyanamid Co.

Rubber Patents, Trade Marks and Designs

657,948. ELECTRICAL DEPOSITION. The Anode Rubber Co. (England), Ltd.

658,359. ARTIFICIAL RUBBER. I. G. Farbenindustrie, A. G.

658,652. MANUFACTURE OF RUBBER. I. G. Farbenindustrie, A. G.

658,757. VULCANIZATION. I. G. Farbenindustrie, A. G.

658,793. ARTIFICIAL RUBBER. The Mechanical Rubber Co.

659,314. PRODUCING DIVINYLE AND HOMOLOGS. I. G. Farbenindustrie, A. G.

659,368 and 659,369. RUBBER COMPOSITIONS. American Glue Co.

659,480. DESULPHURATION OF RUBBER. A. Roger.

660,706. ATTACHING DIVERSE MATERIALS. Nederlandsche Gutta-Percha Mij.

Germany

479,965. RUBBER-LIKE MASSES. I. G. Farbenindustrie A. G., Frankfurt a. m.

General

United States

July 9, 1929*

1,719,902. TIRE VALVE NOZZLE. R. J. Reaney, assignor to Reaney Limited, both of Ottawa, Ont., Canada.

1,720,017. DENTAL CLEANING BRUSH. G. R. Touchstone, Los Angeles, Calif.

1,720,122. BATH SPRAY. R. Findlay, Jamaica, N. Y.

1,720,198. SYRINGE. C. A. Ballreich, Los Angeles, Calif.

1,720,363. BATTERY BOX. P. H. Henkel, assignor to Continental Rubber Works, both of Erie, Pa.

1,720,407. BRAKE LINER. W. B. Wescott, assignor to Rubber Latex Research Corp., both of Boston, Mass.

1,720,432. ECCENTRIC BUSHING. F. Pampinella, Brooklyn, assignor to International Motor Co., New York, both in N. Y.

1,720,545. RESILIENT SHACKLE. C. T. Dickey, Elizabeth, assignor to Rodic Rubber Co., Garwood, both in N. J.

1,720,584. DRESS SHIELD. K. H. Wilson, Richmond, Va.

1,720,630. SQUEEGEE. W. Eiermann, Brooklyn, N. Y.

July 16, 1929*

1,721,006. EMERGENCY TIRE. P. Delaney, Darwin, Minn.

1,721,210. BOTTLE SEALER. D. F. Dalley, Youngstown, O.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Dominion of Canada

July 2, 1929

290,913. TIRE VALVE. P. Helm, Spokane, Wash., U. S. A.

291,008. PRINTERS' BLANKET. The Goodyear Tire & Rubber Co., assignee of R. M. Warner, both of Akron, O., U. S. A.

291,013. TIRE FABRIC CONSTRUCTION. The Goodyear Tire & Rubber Co., assignee of R. D. Evans, both of Akron, O., U. S. A.

291,027. STEEL AND RUBBER ARTICLE. The Ohio Rubber Co., Cleveland, assignee of B. Bronson, Lakewood, both in O., U. S. A.

291,063. FEEDING BOTTLE. J. O. Deegan, Toronto, Ont.

July 9, 1929

291,090. COMPOSITE ARTICLE. H. E. Deane, London, N. 12, England.

291,097. TIRE. E. B. Germain, Buffalo, N. Y., U. S. A.

291,187. QUICK DETACHABLE DUST CAP. The Dill Mfg. Co., assignee of A. E. Bronson, both of Cleveland, O., U. S. A.

291,191. AUXILIARY TREAD STRUCTURE. The Dunlop Rubber Co., Ltd., London, N. W. 1, assignee of F. Fellowes and F. A. Nicholas, Birmingham, Co. of Warwick, all in England.

July 16, 1929

291,409. INSULATING BATTERY CONTAINER. The B. F. Goodrich Co., New York, N. Y., assignee of R. M. Pierson, Akron, O., both in the U. S. A.

United Kingdom

June 19, 1929

310,274. TIRE REPAIR PATCH. F. Woodgates, Heavitree House, Exeter, and Patchquicks Patent, Ltd., Blundells Rd., Tiverton.

310,308. PAN SCRAPER. R. B. Kingman, 385 Tremont Place, Orange, N. J., U. S. A.

310,364.† BLASTING FUSE. W. Eschbach, and F. Habbel, Troisdorf, near Cologne, Germany.

310,392. ABDOMINAL SUPPORT. S. H. Camp, 291 W. Michigan Ave., Jackson, Mich., U. S. A.

310,394. ENDLESS BELT CONVEYER. H. E. Partridge, 48 Castlecroft Rd., Finchfield, Wolverhampton.

310,452,† 310,453,† 310,454,† 310,455,† 310,456,† and 310,457.† PIPE JOINTS. Hume Pipe Co. (South Africa), Ltd., Industrial Sites, Germiston, Transvaal, South Africa.

310,525.† GRAMOPHONE PICK-UP. Naamlooze Vennootschap Philips' Gloeilampenfabrieken 6, Emmasingel, Eindhoven, Holland.

310,537.† MUDGUARD FOR SHOES. P. Parthey, 8 Monckebergstrasse, Hamburg, Germany.

†Not yet accepted.

Rubber Patents, Trade Marks and Designs

June 26, 1929

310,679. Golf Practising Appliance. F. A. Joseph, 43 Hollycroft Ave., Hampstead, London.

310,762. Gramophone Pick-Up. E. W. B. Gill, Merton College, Oxford.

310,774. Auxiliary Wheel. J. Walker, The Paddock, Hampton-in-Arden, Warwickshire.

311,038. Feeding Bottle. L. Javouhey, 2 Honduras St., Old Street, London.

311,056. Wheel Tire. F. W. Farr, 27 Wycliffe Rd., Northampton.

July 3, 1929

311,169. Sole-Engaging Pad. O. Michalk, Freital, Dresden, Germany.

311,544. Road Vehicle Suspension. Alvis Car & Engineering Co., Ltd., and G. T. Smith-Clarke, Holyhead Rd., Coventry.

July 10, 1929

311,626. Heel Protector. P. H. Letchford, 425 Agnes St., Winnipeg, Canada.

311,653. Air Cushion. H. A. Howard, 14 Claremont Rd., Surbiton, Surrey.

311,723. Sealing Cans. L. F. Gee, 22 Mark St., Liverpool, and F. E. Adams, The Grove, Lower Bebington, Cheshire.

311,976. Non-Slipping Sole. A. K. Croad, 70 Chancery Lane, London. (Essex Rubber Co., Trenton, N. J., U. S. A.)

312,008. Hot-Water Bottle Closure. H. W. Franklin, and J. G. Franklin & Sons, Ltd., 15 Colvestone, Crescent, Dalston, London.

France

655,105. Tire Improvements. H. P. J. van Deth.

655,220. Tube Patch. Société des Procédés Fit.

655,520. Tire Improvements. J. F. Long.

655,581. Tube-Repair Disks. L. Rustin.

655,647. Rubber Thread. R. Ducos.

655,657. High Shoes. The Liverpool Rubber Co., Ltd.

656,661. Thin-Walled Articles. I. and L. Dorogi, Société Dr. Dorogi es Tarsa Gummigyar R. T.

657,575 and 657,609. Improved Tires and Rims. The Dunlop Rubber Co.

658,246. Footwear. M. Wissaert.

658,473. Inflatable Body. I. and L. Dorogi, Dr. Dorogi & Co., Gummifabrik, A. G.

658,815. Wheel Rim. F. Sehy and F. Wagner.

Germany

480,397. Fencing Equipment. Franz Clouth Rheinische Gummiwarenfabrik A. G., Koln-Nippes, and Dr. R. Koster, Martin-Lutherstrasse 21, Berlin W. 30.

†Not yet accepted.

Designs

1,078,674. Motor-Cycle Foot-rest. E. Bergfeld, Höhscheid-Solingen.

1,078,678. Bowden Spiral Tube. Katheterreform Willy Rüsch, A. G., Cannstatt.

1,078,689. Sponge Rubber Flower. Gummiwerke Nordland A. G., Hamburg-Wandsbek.

1,078,706. Overshoe Bag. Ekert & Co., Ekert Haus, Hamburg 36.

1,078,965. Rubber for Eye-Glasses. W. Kater, Listerstrasse 34A., Hannover.

1,079,003. Typewriter Pad. Osco Gummiwarengesellschaft M. Thielmann, Giessen.

1,079,267. Cushioning for Eye-Glass. K. Hermes, Altensseelbach b. Neunkirchen, Kr. Siegen.

1,079,280. Syringe Holder. Firma Ernst Erler, Kaiserallee 133, Berlin-Friedenau.

1,079,408. Waist Bands. Sigmund Goeritz A. G., Spittelmarkt 6-7, Berlin S. W. 19.

1,079,509. Stocking. Reinhold Spitzbarth, Zeulenroda i. Th.

1,079,724. Sponge Rubber Toy. H. Lindemann, Wandsbek.

1,079,731. Tires. Carl Schwanitz Gummiwerke A. G., Berlin-Reinickendorf.

1,079,732. Tread. Carl Schwanitz Gummiwerke A. G., Berlin-Reinickendorf.

1,079,826. Hand-Protector. A. Brummermann, Knetterheide b. Schotmar i. L.

1,079,933. Ear Plug. F. Woth, Haspe.

1,080,045. Driving Belt. Carl Schwanitz Gummiwerke A. G., Berlin-Reinickendorf.

1,080,191. Sponge Rubber Soap-container. Gummiwerke Nordland A. G., Hamburg-Wandsbek.

1,080,255. Panty. Marschel Frank Sachs A. G., Chemnitz.

1,080,861. Feeding-Bottle Holder. A. Schwade, Schandauerstrasse 83, Dresden 21.

1,080,862. Exchangeable Heel. T. W. Horn, Schutzenplatz 10, Dresden-A1.

Designs

United States

78,980. Automobile Tire. Term 14 years. N. La Jone, assignor to Inland Rubber Co., both of Chicago, Ill.

Dominion of Canada

8,395. Tire. Dominion Rubber Co., Ltd., Montreal, P. Q.

8,408. Tire Tread. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont.

8,409. Tire Tread. Gutta Percha & Rubber, Ltd., Toronto, Ont.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

July 9, 1929

Act of February 20, 1905

258,383. Rud-Lift. Composition rubber articles, particularly soles and heels for shoes. M. Rudman, doing business as Rudman Mfg. Co., Indianapolis, Ind.

258,385. A disk having on one side a representation of a mounted horseman and the words: "The Excelsior Medal Shoe for Boys July 1910," and on the other side a representation of a swastika having within its limbs representations of a horseshoe, a four-leaf clover, a wishbone, and figures shaped approximately as a segment, a trapezoid, a triangle, and a parallelogram, and the words: "Good Luck Manufactured by the Excelsior Shoe Co., Portsmouth, O." Shoes and boots of leather, rubber, and other fabrics, and combinations of any of those materials. The Excelsior Shoe Co., Portsmouth, O.

258,391. Representation of a shoe sole with a buff-colored band extending diagonally across the tread of the outsole adjacent to the shoe shank. Shoes of leather, fabric, rubber, and combinations of said materials. The United States Shoe Co., Cincinnati, O.

258,425. A diamond containing a smaller heavier-ruled diamond and the letter: "W," joined at the bottom to a rectangle containing the word: "All-Weathers." Rubber composition soles and heels. Weathers Rubber Corp., Somerville, Mass.

258,459. Flexite. Buckets, jars, and dippers of hard or semi-hard rubber or having rubber incorporated therein. The B. F. Goodrich Co., New York, N. Y.

258,469. Minerva. Combs. Hanover Rubber Co. "Excelsior," Inc., New York, N. Y.

258,495. Design formed by joining two letter F's, one turned backward and the other forward. Rubber, pyroxylin, or otherwise coated fabrics. E. I. du Pont de Nemours & Co., Wilmington, Del.

258,497. Parahyde. Waterproof fabric. The Haartz Mason Rubber Mfg. Co., Watertown, Mass.

258,528. Aero Step. Leather shoes with rubber inserts or cushions in the soles. Endicott Johnson Corp., Endicott, N. Y.

258,599. Olympic. Rubber reducing garments. The Olympic Reducing Garment Co., New Haven, Conn.

258,612. Sanoval. Fountain syringes, hot water bottles, and accessories. S. H. Kress & Co., New York, N. Y.

258,654. The words: "Straight Line" above a straight line. Boots and shoes made wholly or partly of rubber. The B. F. Goodrich Co., New York, N. Y.

Rubber Patents, Trade Marks and Designs

Act of March 19, 1920

258,679. RUBBERSET. Shaving brushes. Rubber & Celluloid Products Co., Newark, N. J.

258,680. HARD RUBBER SET. Shaving brushes. Rubber & Celluloid Products Co., Newark, N. J.

258,681. HARD RUBBER SET AND BOUND. Shaving brushes. Rubber & Celluloid Products Co., Newark, N. J.

258,688. NANCY LEE. Rubber apron for household, professional, and industrial uses. Ready Apron Co., Chicago, Ill., now by change of name Vulcatex, Inc.

July 16, 1929

Act of February 20, 1905

258,692. Representation of two joined links containing the words: "ASSOCIATED FACTORIES, BOSTON, MASS." Rubberized raincoats. A. H. Johnson, doing business as Associated Factories, Boston, Mass.

258,713. CAMELAIR. Men's and boys' raincoats and other garments. Henry Sonneborn Co., Baltimore, Md.

258,759. Representation of a scene on an Egyptian tomb, containing thrice the word: "RAMSES." Prophylactic rubber articles for the prevention of contagious diseases. L. Hilsenbeck, Inc., New York, N. Y.

258,760. Representation of a forest scene with a bird of paradise in the foreground and in the lower right-hand corner the word: "PARADISE." Prophylactic rubber articles for the prevention of contagious diseases. L. Hilsenbeck, Inc., New York, N. Y.

258,861. Representation of a bull's-eye across which is the word: "SURESHOT." Golf balls. B. F. Schlesinger & Sons, Inc., New York, N. Y.

258,893. F. O. S. Adhesive tape. The Seamless Rubber Co., Inc., New Haven, Conn.

258,928. Rectangle containing the words: "FLEUR-DE-FASHION FROCKS." Ladies' and misses' raincoats and other garments. Asbury Park Dress Co., Inc., Asbury Park, N. J.

258,935. METEOR. Golf balls. Ken-Wel Sporting Goods Co., Inc., Utica, N. Y.

Act of March 19, 1920

258,979. Ellipse containing the words: "WITH THE SLIPPER THE ROBE TO MATCH." Lounging and bath robes, and slippers of textile fabric with leather, rubber, or composition soles. The Rabhor Co., Inc., South Norwalk, Conn.

258,995. ANDRE PERUGIA. Boots and shoes of leather, rubber, fabric, and combinations of rubber and fabric; and leggings. André Perugia, Paris, France.

Dominion of Canada

July 2, 1929

46,558. Word: "CRISS-CROSS." Tire repair patches made wholly or partly of rubber. The Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

July 9, 1929

46,603. A rectangular rubber patch, bar, or scab colored a medium shade of blue having the word: "DOMINION," imprinted thereon. Footwear of fabric, fabric and rubber, and fabric, leather, and rubber in combination, together with such footwear accessories as rubber and rubber composition soles, heels, taps, and lifts. Dominion Rubber Co., Ltd., Montreal, P. Q.

46,626. Word: "SUESTED." Artificial leather. Stedfast Rubber Co., Mattapan, Boston, Mass., U. S. A.

July 16, 1929

46,699. The capital letters: "G. P." surrounded by a specially designed device consisting of a broken circle and a segment of a larger circle at the bottom of the device. Mechanical rubber goods, rubber belting, hose, and packing, automobile tires, inner tubes, and accessories. Gutta Percha & Rubber, Ltd., Toronto, Ont.

46,700. The capital letters: "G. P." surrounded by the words: "GUTTA PERCHA & RUBBER LIMITED," the same being enclosed in a specially designed device consisting of a broken circle and a segment of a larger circle at the bottom of the device. Rubber footwear. Gutta Percha & Rubber, Ltd., Toronto, Ont.

United Kingdom

June 26, 1929

501,939. FOURSOME. Golf balls and clubs. The Robert Sinclair Tobacco Co., Ltd., Blenheim Tobacco Factory, Westgate Rd., Newcastle-on-Tyne.

502,634. WIMPASSING. India rubber Wellington boots and overshoes. S. Erhard & Son, 8 Bradford Ave., London, E. C. 1.

July 3, 1929

501,962. FLEXSTONE. Boxes or containers made of ebonite, being parts of electric batteries not included in other classes. J. Stone & Co., Ltd., Abinger Rd., Deptford, London, S. E. 14.

502,245. Representation of a double diamond containing the word: "ROBERPILE." All goods included in Class 40. Roberttown Rubber Co., Ltd., Roberttown, Liversedge, Yorkshire.

502,459. DELACROME. All goods included in Class 38. The Dela Rubber Co., Ltd., 2 Cambridge St., Manchester.

503,136. BUFFALO. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,137. BURRO. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,138. PICADOR. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,139. REINDEER. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,140. TANGO. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,141. WOLF. Engine packings and jointings included in Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

July 10, 1929

502,754. DELYSIA. Elastic sandallings, webs, and cords (india rubber). W. E. Whale & Sons, 47 Milton St., London, E. C. 2.

503,041. ACE. Brake blocks, linings, and surfacing materials for brakes and clutches, all made of material covered by Class 50. The Beldam Packing & Rubber Co., Ltd., 16 Gracechurch St., London, E. C. 3.

503,598. TOPICAL. Class 40. Goods manufactured from india rubber and gutta percha not included in other classes. The Express Rubber Co., Ltd., 76, 78 Mortimer St., London, W. 1.

July 17, 1929

492,310. Representation of a tire in the center of which appears a sailing vessel on the ocean. India rubber tires for wheels of cycles and other vehicles. Dunlop Rubber Co., Ltd., Fort Dunlop, Holly Lane, Erdington, Birmingham.

492,312. ROCKET. India rubber tires for cycles and other vehicles. Dunlop Rubber Co., Ltd., Fort Dunlop, Holly Lane, Erdington, Birmingham.

492,315. CLIPPER. Tires made of india rubber or in which india rubber predominates. Dunlop Rubber Co., Ltd., Fort Dunlop, Holly Lane, Erdington, Birmingham.

497,895. Representation of a solid, dark, equilateral triangle across which is the outline of a rectangle. Laces and cords, made principally of india rubber. Wm. S. Stevens, trading as W. Stevens & Co., 31 E. Hill, Wandsworth, London, S. W. 18.

B502,342. LA REINE. Class 40. Hair wavers and curlers manufactured from india rubber and gutta percha not included in other classes. La Reine Hair Waver & Curler Co., Ltd., 67 New Oxford St., London, W. 1.

502,932. DUREX. Feeding bottle teats, sprays, syringes, etc., all being goods (not medicated) for surgical or curative purposes and included in Class 11. L. A. Jackson, trading as The London Rubber Co., 183 Aldersgate St., London, E. C. 1.

Prints

United States

11,933. GOOD — WINGFOOT — YEAR — HIGHWAY OR SKYWAY . . . THE GREATEST NAME IN RUBBER. Aeronautical goods composed wholly or partly of rubber. The Goodyear Tire & Rubber Co., Inc., Akron, O.

"SLIPKNOT" FRICTION TAPE IS DESIGNED for jobbers of automotive, hardware, and electrical supplies. It is a quality tape which can be exposed to any weather conditions without deteriorating. Plymouth Rubber Co., Inc., Canton, Mass.

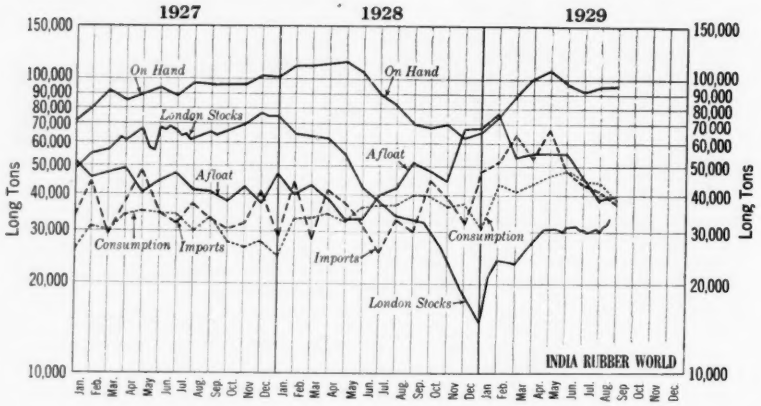
Imports, Consumption, and Stocks

The accompanying graph covers crude rubber importations, consumption, and stocks by months for the years 1927 to 1928, inclusive, and for January to August, inclusive, 1929. The figures for August are estimated.

The corrected imports for July totaled 44,252 tons or 2,252 tons more than the estimated amount.

The corrected consumption for July was 41,114 tons or 3,114 tons more than estimated.

August estimated imports are placed at 38,000 tons. The other estimates for August are: consumption 35,000 tons, on hand 97,000 tons, and afloat 40,000 tons.



United States Imports, Consumption, and Stocks

London stocks from July 27 to August 24, inclusive, advanced to a higher level than at any previous time this year. The weekly record was as follows: July 27, 30,167 tons; August 3, 30,937 tons; August 10, 31,444 tons; August 17, 33,573 tons; August 24, 34,651 tons.

Liverpool stocks on the same dates were: July 27, 4,729 tons; August 3, 4,662 tons; August 10, 4,481 tons; August 17, 5,993 tons; August 24, 7,285 tons.

Twelve Months	Imports Tons	Consumption Tons	Stocks On Hand Tons	Stocks Afloat Tons	London Tons	Singapore and Penang Tons
1925	384,837	389,136	51,000*	48,000*	.....	.....
1926	411,900	366,140	72,510*	52,019*	.....	.....
1927	426,258	370,915	109,130*	47,939*	63,207†	25,868*
1928	448,378	441,336	66,166*	68,764*	24,423†	34,432*
1929						
January	52,305	43,000	76,342	78,596	24,423	33,119
February	64,528	41,594	90,058	53,825	25,000	.....
March	53,824	44,730	100,537	56,476	28,077	33,784
April	74,171	47,051	107,659	55,409	31,213	.....
May	49,180	48,746	97,192	55,404	31,893	.....
June	44,490	43,228	92,062	46,036	30,982	.....
July	44,252	41,114	95,536	38,859	30,500	.....
August (est.)	38,000	35,000	97,000	40,000	.....	.....

*December 31. †January 26.
The 1928 figures, unless otherwise specified, are all as of the first of each month.

Ceylon Rubber Exports

January 1 to June 13, 1929

	Tons
To United Kingdom	6,608.03
Continent	3,533.49
Australia	1,660.68
America	22,816.38
Egypt	5.00
Africa	3.80
India	24.88
Japan	154.80
Total	34,807.06
For the same period last year	20,002.44

Annual Exports, 1921-1928

	Tons
For the year 1928	57,825.48
1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

Plantation Rubber Exports from Malaya*

January 1 to May 31, 1929

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	2,372.00	4,189.00	3,773.00
British Possessions	2,459.00	492.00	210.00
Continent of Europe	11,747.00	2,662.00	3,037.00
United States	81,672.00	23,843.00	10,111.00
Japan	6,612.00	20.00	319.00
Other countries	510.00	50.00	10.00
Totals	105,372.00	31,256.00	17,460.00

*Excluding all foreign transhipments.

Tire Production Statistics

High Pressure Pneumatic Casings

	All Types Inventory	All Types Production	All Types Total Shipments	Cord Inventory	Cord Production	Cord Total Shipments
1928	.....	58,457,863	55,721,937	.....	19,302,218	19,351,380
1929						
January	10,284,158	5,041,530	4,969,647	3,651,041	1,563,554	1,461,104
February	11,620,960	5,183,693	3,961,751	4,073,644	1,373,691	974,185
March	12,263,816	5,639,426	5,031,101	4,330,747	1,397,657	1,157,188
April	12,696,808	5,912,854	5,470,779	4,292,167	1,305,224	1,335,121
May	13,386,440	6,109,026	5,388,291	4,285,674	1,371,987	1,356,529
June	13,467,567	5,477,771	5,440,693	3,956,799	1,249,596	1,594,201

	Balloon Casings Inventory	Balloon Casings Production	Balloon Casings Total Shipments	Solid and Cushion Tires Inventory	Solid and Cushion Tires Production	Solid and Cushion Tires Total Shipments
1928	.....	38,878,218	35,931,982	.....	508,223	512,602
1929						
January	6,583,958	3,470,596	3,499,121	149,240	31,583	33,051
February	7,472,592	3,796,660	2,976,698	145,811	29,747	31,463
March	7,858,642	4,229,886	3,863,650	141,902	35,441	40,205
April	8,346,727	4,601,986	4,123,769	137,613	38,419	43,130
May	9,047,376	4,732,416	4,022,910	133,654	39,611	42,414
June	9,471,532	4,223,335	3,829,506	131,633	39,741	40,355

	High Pressure Inner Tubes Inventory	High Pressure Inner Tubes Production	High Pressure Inner Tubes Total Shipments	Balloon Inner Tubes Inventory	Balloon Inner Tubes Production	Balloon Inner Tubes Total Shipments
1928	.....	23,255,891	23,749,966	.....	36,878,990	34,095,223
1929						
January	4,734,477	1,549,272	1,800,676	6,805,018	3,347,660	3,630,579
February	5,159,171	1,398,156	1,046,042	7,572,752	3,675,116	2,908,406
March	5,356,289	1,475,822	1,276,490	7,938,587	4,120,493	3,773,585
April	5,220,167	1,347,128	1,447,504	8,369,244	4,375,920	3,921,768
May	5,017,011	1,155,013	1,480,293	9,167,038	4,586,606	3,795,350
June	4,384,077	1,177,147	1,698,896	9,654,688	4,049,173	3,510,947

Cotton and Rubber Consumption
Casings, Tubes, Solid and Cushion Tires

	Cotton Fabric Pounds	Crude Rubber Pounds
1928	222,243,398	600,423,401
1929		
January	19,779,481	54,160,529
February	20,326,530	57,558,636
March	21,238,410	61,335,423
April	23,619,687	65,673,453
May	23,302,120	66,028,029
June	20,358,937	56,861,320

Rubber Manufacturers Association figures representing 75 per cent of the industry.

London Stocks, June, 1929

	Landed for June Tons	Delivered for June Tons	Stocked June 30 1929 Tons	Stocked June 30 1928 Tons	Stocked June 30 1927 Tons
LONDON					
Plantation	6,019	6,273	30,875	38,638	63,709
Other grades	9	1	*76	84	128
LIVERPOOL					
Plantation	†1,007	†995	†4,550	†2,335	†2,985
Total tons, London and Liverpool	7,035	7,269	35,501	41,057	66,822

† Official returns from the recognized public warehouses.
* Corrected by inspection

Figure the color cost *per* batch

THE price of a pound of color means but little. For example, if all yellows had the same covering power and specific gravity, lead chromate would be the cheapest yellow color for rubber. Du Pont Rubber Yellow RW costs several times as much per pound as chrome yellow, but the difference in covering power is far greater than the difference in cost. For that reason, and because of its lower specific gravity, it is cheaper to use than chrome yellow and, moreover, it produces better aging stocks.

Du Pont Rubber Orange 2R has set a new standard of color-value for brilliant oranges. Fifty cents worth of this color is usually sufficient to color one hundred pounds of stock. Its bright reddish-orange shade cannot be equalled by inorganic colors. It ages well, is fast to light and does not bloom or bleed. When it formerly sold at a much higher price it was chosen, on the basis of color-value, by producers of such competitive products as hydrometer bulbs and tips. Today's lower price was made possible by large volume production. Take advantage of it to reduce costs.

We gladly offer our assistance in choosing the color that is best adapted for any particular purpose.

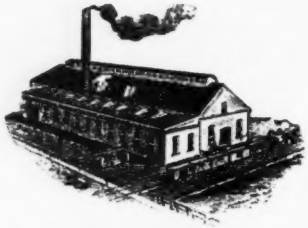
E. I. DU PONT DE NEMOURS & COMPANY, Inc.

Rubber Chemicals Section

WILMINGTON ⋈ DELAWARE

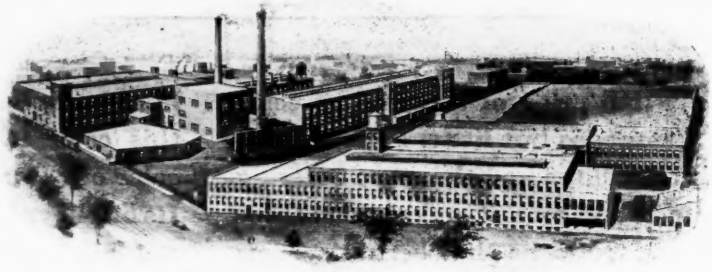
Fine Rubber DU PONT REG. U.S. PAT. OFF. **Chemicals**

From 1883



ORIGINAL PLANT

To 1929



PRESENT PLANT AT BUFFALO, N. Y.

"Quality Grades Since 1883"

FOR 46 years we have rendered the rubber industry the utmost service in Reclaimed Rubber. Not only have we continually improved the qualities of our standard grades, but our chemists have anticipated the needs of rubber manufacturers by developing new grades to meet new requirements. Our long experience in solving reclaim problems is at your disposal.

U.S. RUBBER RECLAIMING CO. Inc.

New York Central Bldg. BUFFALO 230 Park Ave., N.Y.

46 years Serving the Industry— Solely as Rubber Reclaimers

Factories: Buffalo, N.Y.

AKRON REPRESENTATIVE: F. F. Dugan, 617 Second National Building.
CANADIAN REPRESENTATIVE: H. van der Linde, 275 Campbell Ave., Toronto.
TRENTON REPRESENTATIVE: H. M. Royal, Inc., Oakland and Norman Aves.

MARKET REVIEWS

CRUDE RUBBER

New York Exchange

AUG. 1. London continued strong by 1/16 pence. Exchange prices held firm and on fair buying advanced 20 to 30 points on all positions. Offerings from the East were small, causing a more friendly market. The close was steady with bids at the top. Aug., 21.10; Sept., 21.50; Oct., 21.80; Nov., 22.20; Dec., 22.60; Jan., 22.80; Feb., 23.10; Mar., 23.20; Apr., 23.50; May, 23.70; June, 23.90; July, 24.10.

AUG. 2. Due to losses of 3/16 to 5/16 pence in London cables and also to the fact that shipments from Malaya during July were 46,454 tons as compared to 40,398 tons for June, it was thought that London stocks might increase 500 to 600 tons. These figures unsettled the market. Prices opened lower, recovered a little with short covering and fair trade buying, but closed off 30 to 40 points. Aug., 20.60; Sept., 21.20; Oct., 21.40; Nov., 21.80; Dec., 22.10; Jan., 22.30; Feb., 22.60; Mar., 22.80; Apr., 23.00; May, 23.30; June, 23.50; July, 23.70.

AUG. 3. For a Saturday and with London closed because of a bank holiday, a rather active market developed. Certain traders took advantage of a dull market to sell fairly large quantities, which were generally eagerly taken by the trade. Prices, however, closed easier. Aug., 20.50; Sept., 21.10; Oct., 21.20; Nov., 21.60; Dec., 22.00; Jan., 22.20; Feb., 22.50; Mar., 22.60; Apr., 23.00; May, 23.20; June, 23.50; July, 23.70.

AUG. 5. With London still closed, opening prices were higher, and trading, which centered in Sept., Dec., and Mar., with prices showing gains of 10 points to even, was more reserved. Aug., 20.60; Sept., 21.30; Oct., 21.40; Nov., 21.80; Dec., 22.20; Jan., 22.40; Feb., 22.60; Mar., 22.80; Apr., 23.10; May, 23.40; June, 23.60; July, 23.80.

AUG. 6. This was another dull day, only 67 lots traded in, with prices in a range of 10 points on the down side. Aug., 20.50; Sept., 21.00; Oct., 21.30; Nov., 21.70; Dec., 22.10; Jan., 22.30; Feb., 22.50; Mar., 22.70; Apr., 23.30; May, 23.50; June, 23.70; July, 23.80.

AUG. 7. The market was a little more active in the number of actual sales made. But no definite trend was seen, with buyers and sellers about evenly distributed. The nearby position remained at yesterday's prices while the futures were off about 10 to 30 points. Aug., 20.50; Sept., 21.00; Oct., 21.20; Nov., 21.60; Dec., 22.00; Jan., 22.20; Feb., 22.40; Mar., 22.50; Apr., 22.90; May, 23.20; June, 23.40; July, 23.60.

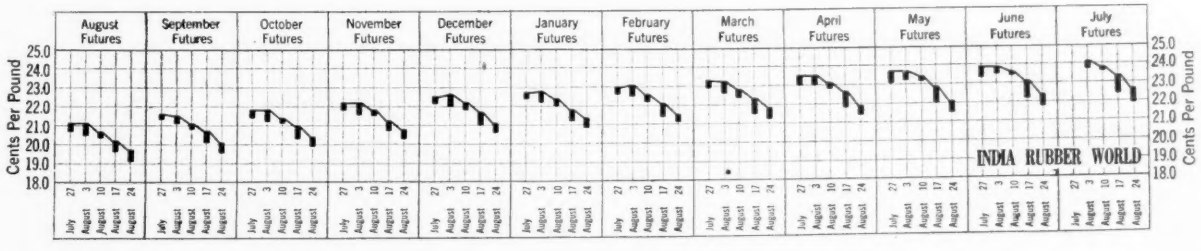
AUG. 8. Lower London cables from 10 13/16 to 10¾ for spot with future positions unchanged unsettled prices about 10 points. Sept. carried the most trading, about 630 tons, with various opinions regarding its ultimate price. Aug., 20.40; Sept., 20.90; Oct., 21.20; Nov., 21.60; Dec., 22.00; Jan., 22.10; Feb., 22.30; Mar., 22.50; Apr., 22.90; May, 23.30; June, 23.50; July, 23.70.

AUG. 9. With the raising of the rediscount rate at New York from 5 to 6 per cent and with slightly easier London cables, rubber prices in a nervous market slipped off further. But trading was rather light, and there seemed some switching, but no distress, by selling Sept. and buying forwards. Aug., 20.30; Sept., 20.80; Oct., 21.10; Nov., 21.50; Dec., 21.80; Jan., 22.00; Feb., 22.20; Mar., 22.40; Apr., 22.80; May, 23.20; June, 23.40; July, 23.60.

AUG. 10. Sales totaled 63. Prices were steady to 10 points higher, with trade interests buying, although few factories took a definite position. Aug., 20.40; Sept. 20.90; Oct., 21.10; Nov., 21.50; Dec., 21.80; Jan., 22.10; Feb., 22.30; Mar., 22.50; Apr., 22.90; May, 23.20; June, 23.40; July, 23.60.

AUG. 12. A fairly active market had lower ranges of prices, off 10 to 20 points on all positions. Rallying power was not evident. Factories went slowly, with the expected consumption report due shortly. Trading of about 440 tons was mixed; some liquidating Sept. and buying forwards while others short of Sept. were covering in. Aug., 20.30; Sept., 20.70; Oct., 21.00; Nov., 21.30; Dec., 21.60; Jan.,

New York Rubber Exchange—High and Low Monthly Futures—Weekly Changes on "A" Contracts



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLEARING HOUSE PRICES—CENTS PER POUND—"A" CONTRACTS

Positions 1929	July, 1929					August, 1929																			
	26	27	29	30	31	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24	26
July	21.1	21.0	20.9	20.9	20.8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
August	21.1	21.0	20.6	20.7	21.0	21.1	20.6	20.5	20.6	20.5	20.5	20.4	20.3	20.4	20.2	20.2	20.2	19.9	19.8	19.6	19.2	19.6	19.4	19.1	19.5	19.7	19.7
September	21.6	21.5	21.4	21.4	21.3	21.5	21.2	21.1	21.1	21.0	21.0	20.9	20.8	20.9	20.7	20.7	20.7	20.4	20.3	20.1	19.7	20.1	19.9	19.6	19.8	20.1	20.1
October	21.8	21.7	21.6	21.5	21.5	21.8	21.4	21.2	21.4	21.3	21.2	21.2	21.1	21.1	21.0	21.0	20.8	20.5	20.5	20.3	19.9	20.4	20.2	19.9	20.1	20.4	20.4
November	22.1	22.1	22.0	22.0	22.0	22.2	21.8	21.6	21.8	21.7	21.6	21.6	21.5	21.5	21.3	21.3	21.2	20.9	20.9	20.7	20.3	20.8	20.6	20.3	20.5	20.8	20.8
December	22.5	22.4	22.3	22.3	22.4	22.6	22.1	22.0	22.2	22.1	22.0	22.0	21.8	21.8	21.6	21.7	21.7	21.2	21.2	21.0	20.6	21.1	21.0	20.6	20.8	21.1	21.1
1930																											
January	22.7	22.6	22.5	22.5	22.5	22.8	22.3	22.2	22.4	22.3	22.2	22.1	22.0	22.1	21.8	21.8	21.8	21.5	21.3	21.2	20.8	21.2	21.1	20.8	21.0	21.3	21.4
February	23.0	22.9	22.8	22.8	22.7	23.1	22.6	22.5	22.6	22.5	22.4	22.3	22.2	22.3	22.0	22.1	22.0	21.6	21.5	21.4	21.0	21.4	21.4	21.0	21.3	21.5	21.6
March	23.3	23.0	23.0	23.0	22.9	23.2	22.8	22.6	22.8	22.7	22.5	22.5	22.4	22.5	22.2	22.3	22.2	21.8	21.6	21.5	21.2	21.6	21.6	21.3	21.5	21.8	21.8
April	23.5	23.3	23.2	23.2	23.2	23.5	23.0	23.0	23.1	23.0	22.9	22.9	22.8	22.9	22.6	22.6	22.5	22.0	22.0	21.8	21.4	21.9	21.7	21.5	21.8	21.9	22.0
May	23.7	23.5	23.3	23.3	23.4	23.7	23.3	23.2	23.4	23.3	23.2	23.2	23.2	23.2	22.9	22.9	22.8	22.2	22.3	22.0	21.5	22.1	21.8	21.8	22.0	22.1	22.1
June	23.9	23.7	23.6	23.5	23.6	23.9	23.5	23.5	23.6	23.5	23.4	23.5	23.4	23.4	23.1	23.1	23.0	22.4	22.5	22.2	21.7	22.3	22.0	22.0	22.2	22.4	22.3
July	....	....	....	....	....	24.1	23.7	23.7	23.8	23.7	23.6	23.7	23.6	23.6	23.3	23.3	23.2	22.6	22.7	22.4	21.9	22.5	22.1	22.2	22.4	22.6	22.5

21.80; Feb., 22.00; Mar., 22.20; Apr., 22.60; May, 22.90; June, 23.10; July, 23.30.

AUG. 13. With London about 1/16 pence easier the opening bids were at about yesterday's close. But sellers were cautious, and as the day progressed, there seemed more activity and plenty of buyers at 10 points under the offers. Sellers, however, would not meet the bids, and activity increased with buyers buying at the offers, resulting in a steady market with prices unchanged to 10 points higher in some of the forward positions. Aug., 20.20; Sept., 20.70; Oct., 21.00; Nov., 21.30; Dec., 21.70; Jan., 21.80; Feb., 21.10; Mar., 22.30; Apr., 22.60; May, 22.90; June, 23.10; July, 23.30.

AUG. 14. London was up 1/8 to 1/4 at the opening and local prices 40 to 60 points in the various positions. There seemed good buying support, yet enough sellers to prevent a runaway market. Later in the morning the publication of consumption figures, 41,526 tons for July, a higher figure than estimated, was a complete surprise to the trade. Prices held steady. With slightly lower cables in the afternoon prices slid off 20 to 30 points and finally closed weak with sellers at yesterday's levels. Aug., 20.20; Sept., 20.70; Oct., 21.00; Nov., 21.30; Dec., 21.70; Jan., 21.90; Feb., 22.00; Mar., 22.30; Apr., 22.50; May, 22.80; June, 23.00; July, 23.20.

AUG. 15. An easier tone existed in foreign markets after the run-up yesterday had caused uneasiness among holders of rubber, especially as factories would not reach for actuals. London also seemed a more willing seller. Yet the bulk of the buying appeared as short covering. More activity was shown on the decline with 623 lots traded. Prices were off 30 to 40 points. Aug., 19.90; Sept., 20.40; Oct., 20.50; Nov., 20.90; Dec., 21.20; Jan., 21.50; Feb., 21.60; Mar., 21.80; Apr., 22.00; May, 22.20; June, 22.40; July, 22.60.

AUG. 16. Rubber continued downward owing to weak cables and lack of factory demand for actuals. There was wide trading, about 1,400 tons changing hands. Liquidation by dealers and commission houses helped the decline; yet foreign buying was reported as well as a quiet absorption by others. Declines averaged about 10 points. Aug., 19.80; Sept., 20.30; Oct., 20.50; Nov., 20.90; Dec., 21.20; Jan., 21.30; Feb., 21.50; Mar., 21.60; Apr., 22.00; May, 22.30; June, 22.50; July, 22.70.

AUG. 17. Continued easier London cables and no support from factories helped depress prices, and a very active Saturday market developed. Stop-loss orders were caught and these helped the decline. Prices were off about 40 points and closed at the lows. Aug., 19.60; Sept., 20.10; Oct., 20.30; Nov., 20.70; Dec., 21.00; Jan., 21.20; Feb., 21.40; Mar., 21.50; Apr., 21.80; May, 22.00; June, 22.20; July, 22.40.

AUG. 19. With the bears in the saddle and London off 1/16 prices again sold off. There was little support and further stop-loss orders were caught making a weak market. There was good buying for the nearby position by large dealers, and also shorts took advantage of the weak market to cover and take profits. Others picked up the future position for a long pull, but the buying was not aggressive enough to help prices, which closed on the lows. Aug., 19.20; Sept., 19.70; Oct., 19.90; Nov., 20.30; Dec., 20.60; Jan., 20.80; Feb., 21.00; Mar., 21.20; Apr., 21.40; May, 21.50; June, 21.70; July, 21.90.

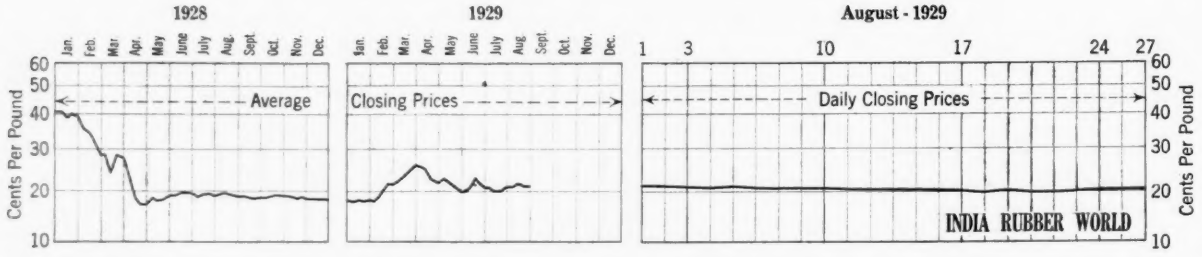
AUG. 20. Both London and Singapore cables were better. Due also to the reports that tire stocks of casings and tubes were materially reduced, prices opened at the previous close but quickly snapped back so that in the first hours of trading prices were up 40 to 50 points. There was more support by trade interests and short covering, which at times was urgent. The market reacted several times and on each decline there was good buying, but towards the close large profit-taking offers found few buyers, and the market reacted about 20 points from the high. Aug. 19.20; Sept., 20.10; Oct., 20.40; Nov., 20.40; Dec., 21.10; Jan., 21.20; Feb., 21.40; Mar., 21.60; Apr., 21.90; May, 22.10; June, 22.30; July, 22.50.

AUG. 21. Higher London cables and an active demand caused prices to advance sharply at the opening and all positions gained from 20 to 30 points, with eager buyers. Later there was switching from nearbys to future positions and fair weights were thrown on the market for future positions, the opinion being that a prominent dealer was trying to depress the market in order to buy in Sept. rubber. Trading was for 900 lots and, in fact, an average of over 900 lots was traded during the past three days. Prices finally closed about 10 points below yesterday's figures. Aug., 19.00; Sept., 19.90; Oct., 20.20; Nov., 20.60; Dec., 21.00; Jan., 21.10; Feb. 21.40; Mar., 21.60; Apr., 21.80; May, 21.90; June, 22.00; July, 22.10.

AUG. 22. With the bears in control and professional selling without support, confidence in the market was lacking and prices could not be held in face of contracts showing losses of 20 points on all active positions. There was a fair business in switching from nearbys to futures at 10 to 110 points showing confidence in futures but lack of confidence in nearbys. Aug., Dec., 20.60; Jan., 20.80; Feb., 21.60; Mar., 19.10; Sept., 19.60; Oct., 19.90; Nov., 20.30; 21.30; Apr., 21.50; May, 21.80; June, 22.00; July, 22.10.

AUG. 23. Better trade news, week-end evening up, and large switching operations turned the apparently weak market around. Solid absorption of Dec. by a large commission house and a limited offering of shipment rubber at rather high figures aided the advance of prices a full 20 points, with buyers at the close. Aug., 19.50;

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	July, 1929									August, 1929												
	22	23	24	25	26	27	29	30	31	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17
Sheet																								
Ribbed smoked	21	21	20⅞	21	21⅛	21¼	21⅛	21⅛	21⅛	21⅛	21¼	21⅛	21	21⅛	21	20¾	20⅞	20⅞	20¾	20¾	20¾	20½	20⅜	20¼
Crepe																								
First latex	22¼	22	21⅞	22	22⅛	22¼	22⅛	22½	22¼	22⅝	22⅜	22¼	22¼	22¼	22	21⅞	21¾	21⅞	21⅝	21⅝	21⅝	21½	21⅜	21⅜
"B" blanket	18⅝	18⅜	18¼	18¼	18⅝	18⅝	18½	18½	18⅝	18⅝	18½	18⅜	18¼	18⅜	18⅛	18	18	18	17¾	17¾	17¾	17⅝	17½	17⅜
"C" blanket	18½	18½	18	18	18⅜	18⅜	18¼	18¼	18⅜	18⅜	18⅛	18	18	18	17¾	17⅝	17⅝	17¾	17⅝	17⅝	17⅝	17⅜	17¼	17⅛
"D" blanket	17⅞	17⅝	17⅝	17⅝	17⅞	17⅞	17¾	17¾	17¾	17¾	17⅝	17½	17¼	17⅛	16⅞	16¾	16⅞	16⅞	16⅝	16⅝	16⅝	16⅝	16⅜	16⅜
No. 2 brown	18¼	18⅛	17⅞	18	18¼	18¼	18⅛	18⅛	18¼	18⅜	18⅛	18	17⅞	18	17¾	17¾	17¾	17⅞	17⅝	17⅝	17⅝	17⅜	17¼	17
Rolled brown	13⅛	13	13	13⅛	13⅛	13¼	13⅜	13⅜	13½	13¼	13⅛	13	13¼	13⅛	13	13	13¼	13¼	12¾	12¾	12¾	12¾	12½	12½
Off latex	21⅞	21½	21⅜	21⅜	21¼	21⅜	21½	21½	21¾	22⅛	21¾	21⅝	21¾	21⅞	21½	21¼	21¼	21¼	21⅛	21⅛	21⅛	21	20¾	20⅞

Sept., 19.80; Oct., 20.10; Nov., 20.50; Dec., 20.80; Jan., 21.00; Feb., 21.30; Mar., 21.50; Apr., 21.80; May, 22.00; June, 22.20; July, 22.40.

AUG. 24. An active Saturday market developed with nervous shorts and fairly active trading, causing prices to advance a further 20 to 30 points and closing at the top. Aug., 19.70; Sept., 20.10; Oct., 20.40; Nov., 20.80; Dec., 21.10; Jan., 21.30; Feb., 21.50; Mar., 21.80; Apr., 22.00; May, 22.20; June, 22.40; July, 22.60.

AUG. 26. Opening prices were lower after Saturday's strong market, yet one broker representing dealer and commission-house clients seemed a consistent buyer. A few stop-loss and selling orders were soon taken out of the market at 20 to 30 points below Saturday's close. Offers then ceased and buyers appeared in the active positions so that prices closed strong and up 30 points from Saturday's close. Aug. 19.70; Sept., 20.10; Oct., 20.40; Nov. 20.80; Dec., 21.10; Jan., 21.40; Feb., 21.60; Mar., 21.80; Apr., 22.00; May, 22.10; June, 22.30; July, 22.50.

New York Outside Market

AUG. 1. Firmer London cables and few CIF offers, together with strength on the Exchange, caused dealers to be reserved and raise their prices. However, a better inquiry came from factories interested in Oct.-Dec., but unwilling to pay the premium asked. Some business was put through for small lots of nearby.

Spot	Today	Month Ago	Year Ago
Crepe	22¾	22½	19¾
Ribs	21⅜	21⅛	19½
Upriver Fine	22	22	22½

AUG. 2. London lost 3/16 to 5/16 in the opening cables. This had an unsettling effect on prices; so actual demand without making any bids held off to see how far the reaction would go. Shipment figures were confusing. An increase in London stock due to holidays on Saturday and Monday was a further cause to stand by. Prices were off ¼- to ⅜-cent on all grades and positions.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	22½	19¾
Ribs	21	21⅜	18⅞
Upriver Fine	22	22	22

AUG. 3. With London still closed and most of the trade on holiday no business in actuals was reported. Prices were stationary.

Spot	Today	Month Ago	Year Ago
Crepe	22½	22½	19⅝
Ribs	21	21⅜	18⅞
Upriver Fine	22	22	22

AUG. 5. A better feeling was shown in actuals, and it was stated that several of the larger rubber factories were buying in substantial quantities although smaller factories were holding off. Most of the buying was for nearby rubber. Although bids were made for futures, very few sales were consummated.

Spot	Today	Month Ago	Year Ago
Crepe	22⅜	22⅜	20¼
Ribs	21	21¼	19¾
Upriver Fine	22	21¾	22⅛

AUG. 6. Little actual rubber was offered by CIF sellers. Although exchange prices were slightly lower, dealers were reluctant sellers as they could not replace rubber at a profit. There was a good interest for spot and nearby rubber slightly under the market, but no bids. Future positions were neglected, but the opinion

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and August 27, the current date

Plantation Hevea	August 25, 1928	July 25, 1929	August 27, 1929
Rubber latex (Hevea)...gal.	$1.40 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.19⅜@	.22½@.22¾	.21⅝@
August-September	.19⅛@	.22¾@.23	.21⅝@
October-December	.19⅜@	.23 @.23¼	.22¼@
January-March	.19⅜@	@	.23 @
January-June	.19⅜@	@	.23½@
Off latex, spot	.19¼@	.21¾@.22	.21⅜@
"B" Blanket, spot	.19½@	.18¾@.19	.18 @
August-September	.18⅞@	.19 @.19¼	.18 @
October-December	.18⅝@	.19¼@.19¾	.18¼@
January-March	.18½@	.19½@.20	.18¾@
January-June	.18¾@	@	.19⅛@
"C" Blanket, spot	.19¼@	.18¾@.18¾	.17¾@
Brown No. 1	.18¾@	.18½@.18¾	.17½@
Brown No. 2	.18½@	.18¼@.18⅝	.17 @
Brown, roll	.18¼@	.14 @.14½	.12½@
Sheet			
Ribbed, smoked spot	.19 @	.21 @.21⅛	.20⅝@
August-September	.19 @	.21½@	.20⅝@
October-December	.19 @	.22¼@.22⅜	.21⅜@
January-March	.19 @	.22¾@.23	.22 @
January-June	.19 @	@	.22½@
East Indian			
PONTIANAK			
Banjermasin	.09¼@	.10 @	.10 @
Pressed block	.15½@	.17 @	.16 @.17
Sarawak	.09½@	.10 @	.10 @
South American			
PARAS			
Upriver, fine	.21 @	.22¼@	.21 @
Upriver, fine	*.25½@	*.28¾@	*.27 @
Upriver, coarse	@	.12 @	.11¼@
Upriver, coarse	*.15 @	*.19 @	*.18½@
Islands, fine	.22 @	.20½@	.19¼@
Island, fine	*.25½@	*.28 @	*.26¾@
Acre, Bolivian, fine	.22 @	.23 @	.21½@
Acre, Bolivian, fine	*.26 @	*.29½@	*.27¼@
Beni, Bolivian	.22¼@	.23½@	.21¾@
Maderia, fine	.22 @	.22¼@	.21¼@

South American	August 25, 1928	July 25, 1929	August 27, 1929
PARAS—*Continued*			
Peruvian, fine	.21 @	.21¼@	.19½@
Tapajos, fine	.20½@	.21½@	.19½@
CAUCHO			
Upper caucho ball	.13¼@	.12 @	.11¼@
Upper caucho ball	*.22 @	*.19 @	*.18½@
Lower caucho ball	.12¾@	.11 @	.10¾@
Maniçobas			
Ceará negro heads	@	†.20 @	@
Ceará scrap	@	†.12 @	@
Manicoba, 30% guaranteed	@	†.22 @	@
Mangabiera, thin sheet	@	†.22 @	@
Centrals			
Central scrap	.14¼@	.11 @.12	.10½@
Central wet sheet	.10 @	.08 @.10	@
Corintó scrap	.14¼@	.11 @.12	.10½@
Esmeralda sausage	.14¼@	.11 @.12	.10½@
Guayule			
Duro, washed and dried	.19 @	.19½@	.19 @
Ampar	.20½@	.20½@	.20 @
Gutta Percha			
Gutta Siak	.18½@	.22 @	.21½@
Gutta Soh	.30 @	.29 @	.29 @.30
Red Macassar	2.90 @	2.50 @	2.50 @2.60
Balata			
Block, Ciudad Bolivar	.41 @	.51 @.52	.52 @
Colombia	.42 @	.45 @.47	.47 @
Manaos block	@	.56 @.60	.59 @
Panama	@	.45 @.47	@
Surinam sheet	.50 @	.54 @.55	.56 @
Amber	.52 @	.57 @.58	.57 @
Chicle			
Honduras	‡.68 @	‡.68 @	‡.68 @
Yucatan, fine	‡.68 @	‡.68 @	‡.68 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	August, 1929 19	20	21	22	23	24
Sheet						
Ribbed smoked	19⅞	20⅛	19⅞	19⅞	20	20⅛
Crepe						
First latex	20⅞	21⅛	21⅛	21	21¼	21⅜
"B" blanket	17	17⅜	17¼	17⅛	17¼	17¼
"C" blanket	16¾	17⅛	17	16⅞	17	17
"D" blanket	16⅜	16½	16¼	16¾	16½	16½
No. 2 brown	16½	17⅛	16¾	16¾	17	17
Rolled brown	12⅛	12⅛	12⅜	12⅜	12½	12½
Off latex	20½	20¾	20⅝	20½	20¾	20⅞

Low and High New York Spot Prices

PLANTATIONS	August 1929*	August 1928	August 1927
First latex crepe	$0.20¾@$0.22¾	$0.19¼@$0.20½	$0.34¼@$0.36⅜
Smoked sheet, ribbed	.19⅝@ .21⅜	.18¾@ .20	.34 @ .36¼
PARAS			
Upriver, fine	.20⅜@ .22	.20½@ .23	.30 @ .30¾
Upriver, coarse	.10 @ .12⅛	.13⅝@ .15¼	.19¾@ .20¼
Islands, fine	... @ ...	.18¾@ .20	.26½@ .27¼

*Figured to August 27, 1929.

was that on any further recessions factories would buy good quantities.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	22⅜	19⅛
Ribs	21	21¼	19
Upriver Fine	22	21¾	22

AUG. 7. Many small factories decided to pay the offered price as dealers refused to meet their bids because of firm shipment offers. Prices were steady and unchanged from yesterday.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	22⅜	20⅜
Ribs	21	21¼	19⅞
Upriver Fine	22	22	22½

AUG. 8. Lower London cables caused lower exchange prices. But offers for CIF rubber were unworkable; so little buying was done as dealers awaited a weakening in Singapore. Producers, however, were holding off their offers, expecting better prices later in the year. A little business was put through for nearby and Para, but no reaching for requirements was noted. Prices closed unchanged.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	23⅝	20⅜
Ribs	21	21½	19⅞
Upriver Fine	21¾	22¾	22½

AUG. 9. With London slightly easier and exchange prices off about 10 points, factories unsuccessfully bid for rubber under the market. Dealers were reluctant sellers owing to high, unworkable shipment offers and the few CIF offers in the market. Nearby ribs were about ⅛-cent off, with few actual offers. Browns were slightly easier, but crepe held steady and is very scarce.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	23⅛	20½
Ribs	20⅞	21⅞	20
Upriver Fine	21¾	22½	23

AUG. 10. Although there were a few nibbles for actual rubber, few sales were reported, and the market closed steady at yesterday's prices.

Spot	Today	Month Ago	Year Ago
Crepe	22¼	23⅛	20½
Ribs	20⅞	21⅞	20
Upriver Fine	21¾	22½	23

AUG. 12. Manufacturers appear to be waiting for the consumption reports for July, and are holding back. However, it was noted that the large ones were buyers for futures in the far east markets. This followed recent purchases for nearby. Shipment offers were strong while nearby, neglected for the moment, eased off ⅛ to ¼ for some positions. Standard crepe and ribs are scarce, while the off-grades are more plentiful both in the New York and foreign markets.

Spot	Today	Month Ago	Year Ago
Crepe	22	23½	20¼
Ribs	20¾	21¾	19⅞
Upriver Fine	21½	22½	22

AUG. 13. Outside rubber prices for actuals showed slight declines of ⅛-cent for some positions and grades, and on these recessions there was good factory buying for some Aug., Sept., and Oct. rubber. Buyers took fairly good quantities. Dealers did not make many concessions as shipment offers were high, but in enough quantities. Some dealers preferred to wait publication of consumption figures and so refused the bids made. Prices closed rather steady with firm undertone.

Spot	Today	Month Ago	Year Ago
Crepe	21⅞	22¾	20½
Ribs	20⅞	21½	20
Upriver Fine	21¼	22¼	23

AUG. 14. Consumption figures for July were 41,526 tons against 43,228 for June. The trade was rather surprised, for it had a lower estimate. Consumption for the seven months this year is figured at 310,834 against 248,972 last year. Imports, however, for the seven months this year were 362,759 as against 245,879 last year. Stock on hand at the end of July amounted to 134,393 tons as compared to 125,546. Even with a higher consumption enough rubber exists, and, therefore, buyers are not worried about their supplies. This seems the answer to the present lower prices.

With the publication of these figures prices on the Exchange advanced about 40 points, and the market appeared strong. But buyers for actuals hung back, and as the day progressed, sellers predominated, with a recession of about 40 points to yesterday's close. Late in the evening factories were fair buyers, but lowered bids again whenever they obtained rubber at their original bids.

Spot	Today	Month Ago	Year Ago
Crepe	21⅞	22¾	20
Ribs	20⅞	21½	19⅝
Upriver Fine	21¼	22¼	23

AUG. 15. Manufacturers bought rubber on the break, but were cautious buyers. Although the undertone appears bearish for the moment, some believe that the technical position of rubber is much improved. The market was steady at the close.

Spot	Today	Month Ago	Year Ago
Crepe	21⅝	22¾	20⅛
Ribs	20⅝	21½	19⅝
Upriver Fine	21	22¼	22¾

AUG. 16. Exchange prices were weak, and buyers for actuals held off. Shipment offers were too high to be workable and dealers were reserved and paid most attention to exchange prices. There was fair business in Sept., and a little Oct.-Dec. rubber was sold. It was understood that rather large buying orders were in evidence under the market.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	22¾	21⅛
Ribs	20½	21½	19⅝
Upriver Fine	21	22¼	22¾

AUG. 17. Although the exchange market was active and weak, dealers with actuals to sell preferred to wait over for Monday, and with factory buyers out of town no business was reported. Few cared to quote prices although the market tendency was lower.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	22¾	20⅛
Ribs	20½	21½	19⅝
Upriver Fine	21	22¼	22¾

AUG. 19. The market was depressed and prices declined. Liquidation continued and as usual factories did not buy on the falling market. However the market is getting narrower and the bears are less confident, for at the present level rubber is cheap and it is felt the factories have to buy Oct.-Dec. and Jan.-Mar. rubber. A few purrchases for actuals were made but a watchful waiting attitude prevailed. Prices were off 3/8- to ½-cent.

Spot	Today	Month Ago	Year Ago
Crepe	21	22	19¾
Ribs	19⅞	20⅞	19⅜
Upriver Fine	20⅝	22¼	22¾

AUG. 20. With decided strength in the Exchange and with the turn about of the market which originated in the report that tire stocks had been reduced by some 2,000,000, prices for actuals snapped back about 3/8-cent with some active buying by factories and dealers. Shipment offers were quickly picked up and good bids sent out to the Far East for more. Nearbys were strongly held and a bid for 300 tons of Sept. rubber at a fair price was turned down by dealers. The market held firm at the close.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	22	19⅜
Ribs	20¼	20⅞	19¼
Upriver Fine	20⅝	22¼	22

AUG. 21. With early strength on the Exchange and firm shipment cables dealers were asking higher prices for actuals. Shipment offers were in fair quantities but at almost unworkable figures, which added strength to the market. Later in the day, however, with profit taking on the Exchange, which caused lower prices, demand for Sept.-Oct. and some Jan.-Mar. rubber appeared from manufacturers, which caused more activity among dealers and those with eastern connections. Closing prices were about ⅛ lower than yesterday, with nearby tight and reluctant sellers for these positions.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	22½	19¾
Ribs	20⅛	21⅛	19⅜
Upriver Fine	20⅝	22	22¾

AUG. 22. Although London opened steady, it did not hold its strength and with Singapore off ⅛ pence, prices declined with losses of about 30 points on the Exchange. The outside market followed with crepe off ¼-cent and ribs slightly over ¼-cent. There was a light demand for actual rubber, with the dealers reserved as shipment offers did not show enough decline to make prices attractive.

Spot	Today	Month Ago	Year Ago
Crepe	21	21½	19⅞
Ribs	19¾	20¾	19¾
Upriver Fine	20½	22	22

AUG. 23. There was firm demand for actuals and a better feeling in the market. This, with short covering on the Exchange for over the week-end and quiet absorption of Dec. by a large trade interest, stiffened prices and they recovered the ¼-cent lost the day before, closing very steady.

Spot	Today	Month Ago	Year Ago
Crepe	21⅞	22½	19¾
Ribs	20	21⅛	19⅝
Upriver Fine	21½	23	22¾

AUG. 24. Although little business was passing in actual rubber, yet the market had a strong undertone. This was due to reported strong buying by large manufacturers in Singapore and also purchases for London in the same market. There were bids for good tonnage slightly under the dealers' offering prices, but were refused by holders, who were reserved in their offerings. Prices stiffened ¼- to 3/8-cent at which a few sales were made.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	22¾	19¼
Ribs	20⅜	21⅜	19
Upriver Fine	20⅝	22	21

AUG. 26. The market for actuals showed a good underlying demand. Buyers and sellers were about ⅛- to ¼-cent apart in their ideas. Only a small tonnage was sold owing to manufacturers' buying in Singapore.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	20¾	19¼
Ribs	20⅜	21⅜	19
Upriver Fine	20⅝	22	21

Rubber Afloat to the United States

All figures in long tons.

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
July 27..	6,649	432	1,988	75	9,144
Aug. 3..	4,784	780	1,251	10	6,825
Aug. 10..	5,850	873	1,222	nil	7,945
Aug. 17..	5,444	593	1,444	33	7,514
Aug. 24..	5,560	602	1,401	23	7,586

Price Differentials

The adjustment committee of the Rubber Exchange of New York on August 17 fixed differentials between various grades of Hevea plantation rubber on all grades deliverable on exchange contracts during September as follows:

"A" Contracts. Off quality first latex crepe, one-tenth cent per pound; good F. A. Q. ribbed smoked sheets, one-half cent; ordinary F. A. Q. ribbed smoked sheets, one and one-tenth cent per pound.

"BB" Contracts. "C" blanket crepe, one-quarter cent per pound; "D" blanket crepe, three-quarters cent per pound; No. 1 brown crepe, contract price; No. 2 brown crepe, one-quarter cent differential.

The committee also fixed the following limits of allowance on the two lowest grades deliverable against the "BB" contract as follows: "D" blanket crepe, one-half cent per pound; No. 2 brown crepe, one-quarter cent per pound.

Henderson's Report—Aug. 19

Trading in crude rubber futures on the Rubber Exchange of New York increased toward the end of the week, when heavy selling developed, says the F. R. Henderson Corp. weekly summary.

"The pressure of selling brought about lower levels," the report says, "the range of price fluctuations for the week amounting to 1.2 cents per pound.

"The estimated increase in the London stocks of more than 2,000 tons this week had a depressing effect, which indicates the present position of the market. Continued hesitancy on the part of operators curtailed trading somewhat. The motor outlook for the last half of the year is promising, while the tire situation is rather spotty.

"Consumption of crude rubber during July exceeded most of the trade estimates by 3,000 to 4,000 tons. The consumption of crude during the first seven months of 1929 exceeds that of the same period in 1928 by nearly 25 per cent. It is expected that consumption in the United States for the entire year 1929 will approximate 500,000 tons.

"We estimate arrivals U. S. A. all ports from August 1 to August 16, inclusive, to be 14,200 tons."

Nominating Committee

The Board of Governors of the Rubber Exchange of New York has appointed the following members to serve as a nominating committee which will name candidates for all offices to be filled at the forthcoming election of the Exchange: Lawrence G. Odell, chairman; Louis W. Dumont; J. L. Julian; Homer W. Orvis; and Joseph S. Rodenbough.

RECLAIMED RUBBER

ALL types of reclaim are in somewhat slower movement than they were a month ago, owing especially to the summer seasonal decline in tire production. The consumption of reclaim is therefore off about 10 per cent or more from two months ago. The large tire companies are believed to have overestimated tire consumption; therefore they made drastic cuts in their production schedules. Naturally this eased up on the demand for compounding materials.

In the reclaiming division, production is proceeding steadily at moderate rate just at present. However, as soon as the excessive inventories are reduced, all manufacturers will doubtless return to high production schedules in the autumn.

Under existing conditions the prices of all the standard types and grades of reclaim remain unchanged from the quotations of one month ago. It should be noted that current prices are very moderate and consequently represent remarkably profitable values to the rubber goods manufacturers.

New York Quotations

August 27, 1929

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black	1.20	$0.12¼ @ $0.12¾
red	1.20	.12 @ .12½
Auto Tire		
Black	1.21	$0.07½ @ $0.07¾
Black selected tires	1.18	.08 @ .08¼
Dark gray	1.35	.10 @ .10¼
Light gray	1.38	.12 @ .12¼
White	1.40	.12½ @ .13
Shoe		
Unwashed	1.60	.07 @ .07¼
Washed	1.50	.09¾ @ .10
Tube		
No. 1	1.00	.13 @ .13½
No. 2	1.10	.10¾ @ .10½
Truck Tire		
Truck tire, heavy gravity	1.55	.07 @ .07¼
Truck tire, light gravity	1.40	.07¼ @ .07½
Miscellaneous		
Red	1.35	.12¼ @ .12¾
Mechanical blends	1.60	.07 @ .07½

RUBBER SCRAP

THE rubber scrap market was seasonably quiet in both July and August. Although reclaimers are less active than during the spring months, the movement of rubber scrap is steady, at prices the same as in July.

BOOTS AND SHOES. The market is quiet on this grade. Untrimmed arctics and tennis are unchanged.

HARD RUBBER. Price firm and unchanged. Trade seasonably dull.

MECHANICALS. Market generally dull. Prices firm and unchanged on the entire line.

TIRES. The demand is fair to active. Prices remain practically the same as a month ago. Mixed auto tires with beads are 50 cents a ton lower.

MIXED AUTO PEELINGS. This grade is in more active demand. The price has dropped $1 a ton.

MIXED MOTOR TRUCK TIRES. These are in demand at $22 a ton, unchanged from last month.

INNER TUBES. There is a scarcity of the floating grade on which the price holds at 7¼ cents a pound. Mixed tubes have advanced to 4⅜ cents.

CONSUMERS' BUYING PRICES

Carload Lots

August 27, 1929

Boots and Shoes		Prices
Boots and shoes, black	lb.	$0.01⅛ @ $0.01¼
Untrimmed arctics	lb.	.00¾ @ .01
Tennis shoes and soles	lb.	.00¾ @
Hard Rubber		
No. 1 hard rubber	lb.	$0.08 @ $0.08½
Mechanicals		
Mixed black scrap	lb.	.00½ @ .00⅝
Hose, air brake	ton	23.00 @ 25.00
regular soft	lb.	.00⅝ @
No. 1 red	lb.	.02 @ .02¼
No. 2 red	lb.	.01 @ .01⅛
White druggists' sundries	lb.	.02 @ .02½
Mechanical	lb.	.01⅛ @ .01⅛
Tires		
Pneumatic Standard—		
Mixed auto tires with beads	ton	24.00 @ 24.50
Beadless	ton	32.50 @ 33.50
White auto tires with beads	ton	40.00 @ 42.00
Beadless	ton	48.00 @ 49.00
Mixed auto peeling	ton	35.00 @ 35.50
Solid—		
Mixed motor truck, clean	ton	22.00 @
Inner Tubes		
No. 1, floating	lb.	0.07¼ @ 0.07½
No. 2, compounded	lb.	.04¼ @ .04¾
Red	lb.	.04¾ @ .05
Mixed tubes	lb.	.04⅜ @ .04½

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	May, 1929		Five Months Ended May, 1929	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	114,690,456	$24,355,511	*625,840,631	*$117,940,649
Liquid latex	56,670	9,320	.....	.....
Jelutong or Pontianak	1,684,562	212,400	8,003,384	1,057,901
Balata	156,696	67,891	1,020,611	341,079
Gutta percha	170,384	24,053	574,818	109,120
Guayule	280,000	57,260	467,000	95,501
Siak, scrap and reclaimed	1,606,672	33,284	8,832,860	190,837
Totals	118,555,440	$24,759,719	644,739,304	$119,735,087
Chicle *dutiable*	1,152,362	$552,637	7,764,754	$3,851,586
MANUFACTURED—*Dutiable*				
Belting	6,405	$3,982	20,034	$11,056
Tires	389	12,028	1,069	19,992
Other rubber manufactures	.....	177,789	.....	907,869
Totals	6,794	$193,799	21,103	$938,917

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	6,353,163	$1,349,690	38,004,891	$8,216,148
Balata	2,426	1,276	64,654	24,456
Gutta percha, rubber substitutes, and scrap	30,690	394	75,613	6,598
Rubber manufactures	.....	73,727	.....	126,548
Totals	6,386,279	$1,425,087	38,145,158	$8,373,750

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	2,909,131	$211,060	13,781,493	$956,376
Scrap and old	4,585,130	216,220	21,686,082	1,054,447
Rubberized automobile cloth, *sq. yd.*	170,916	90,736	1,129,938	584,610
Other rubberized piece goods and hospital sheeting *sq. yd.*	158,952	66,543	856,238	372,589
Footwear				
Boots *pairs*	61,404	152,015	377,040	862,525
Shoes *pairs*	138,466	85,325	773,820	607,111
Canvas shoes with rubber soles *pairs*	661,538	451,941	3,100,399	2,031,930
Soles *doz. pairs*	7,375	23,078	60,571	170,935
Heels *doz. pairs*	113,547	82,683	686,906	496,509
Water bottles and fountain syringes *number*	30,480	19,378	147,820	99,785
Gloves *doz. pairs*	9,347	24,190	44,544	118,195
Other druggists' sundries	.....	29,098	.....	163,951
Balloons *gross*	50,048	55,729	302,483	310,818
Toys and balls	.....	19,929	.....	79,164
Bathing caps *doz.*	27,806	48,738	115,828	247,601
Bands	29,578	15,932	207,618	111,940
Erasers	41,760	27,246	232,770	152,994
Hard rubber goods				
Electrical goods	234,413	25,673	1,070,088	133,403
Other goods	.....	41,090	.....	194,386
Tires				
Casings, auto *number*	226,959	2,958,659	1,352,813	16,485,397
Truck and bus casings, 6 inches and over, *number*	30,941	886,100	136,914	3,702,486
Other automobile casings *number*	196,018	2,072,559	1,215,899	12,782,911
Tubes, auto *number*	163,335	275,942	908,882	1,615,962
Other casings and tubes, *number*	3,984	9,260	119,445	369,046
Solid tires for automobiles and motor trucks, *number*	22,016	191,890	37,341	720,913
Others	222,744	40,584	825,480	147,930
Tire accessories	.....	151,200	.....	736,952
Rubber and friction tape	128,702	35,472	735,671	216,932
Belting	582,070	319,494	2,442,716	1,304,473
Hose	765,339	263,036	3,893,211	1,304,957
Packing	187,973	84,702	1,731,733	525,594
Thread	153,049	146,184	735,799	758,095
Other rubber manufactures	.....	249,709	.....	1,534,815
Totals	.....	$9,371,895	.....	$50,955,732

*Liquid latex included.

Crude Rubber Imports by Customs Districts

	*June, 1929		Six Months Ended *June, 1929	
	Pounds	Value	Pounds	Value
Massachusetts	3,551,761	$719,842	21,451,232	$4,013,128
New York	78,780,626	15,893,703	623,035,798	118,696,229
Philadelphia	122,440	27,419	2,890,333	534,343
Maryland	553,653	111,880	12,728,224	2,320,149
Los Angeles	7,493,081	1,490,621	36,545,266	7,169,582
San Francisco	148,544	30,708	889,922	187,870
Oregon	11,200	1,998	89,600	16,136
Chicago	.....	.....	17,148	3,430
Ohio	2,482,420	476,905	19,246,433	3,320,035
Colorado	561,223	121,114	2,711,623	553,763
Totals	93,694,948	$18,874,280	719,535,579	$136,814,665

*Including latex, dry rubber content.

United Kingdom Statistics

IMPORTS

UNMANUFACTURED	June, 1929		Six Months Ended June, 1929	
Crude Rubber From—	Pounds	Value	Pounds	Value
Straits Settlements	8,314,100	£370,925	74,610,700	£3,286,407
Federated Malay States	3,762,200	166,221	32,861,000	1,466,603
British India	824,000	34,908	6,224,700	281,564
Ceylon and Dependencies	2,508,000	114,540	17,279,000	797,102
Other Dutch possessions in Indian Seas	1,045,100	48,688	11,529,300	535,450
Dutch East Indies (except other Dutch possessions in Indian Seas)	2,458,000	111,585	13,557,700	611,181
Other countries in East Indies and Pacific not elsewhere specified	192,100	8,484	1,118,500	49,799
Brazil	581,800	26,817	3,899,600	175,369
South and Central America (except Brazil)	.....	.....	123,400	5,426
West Africa				
French West Africa	8,500	326	96,400	2,915
Gold Coast	32,400	1,585	233,400	10,814
Other parts of West Africa	133,600	5,304	1,059,600	44,337
East Africa, including Madagascar	43,900	2,050	427,100	19,005
Other countries	219,000	9,331	853,200	38,529
Totals	20,122,700	£900,764	163,873,600	£7,324,501
Gutta percha and balata	228,900	19,076	2,278,800	172,100
Waste and reclaimed rubber	1,043,600	13,426	5,765,100	67,888
Rubber substitutes	800	37	45,600	1,174
Totals	21,396,000	£933,303	171,963,100	£7,565,663
MANUFACTURED				
*††Tires and tubes				
Pneumatic				
Outer covers	.....	£30,688	.....	£266,857
Inner tubes	.....	5,972	.....	47,538
Solid tires	.....	7,059	.....	47,683
Boots and shoes *doz. pairs*	116,551	148,485	655,638	813,534
Other rubber manufactures	.....	181,934	.....	1,012,436
Totals	.....	£374,138	.....	£2,188,048

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	2,552,900	£22,622	16,656,000	£131,627
Rubber substitutes	119,500	2,520	477,200	9,860
Totals	2,672,400	£25,142	17,133,200	£141,487
MANUFACTURED				
‡Tires and Tubes				
Pneumatic				
Outer covers	.....	£234,592	.....	£1,551,674
Inner tubes	.....	40,510	.....	250,996
Solid tires	.....	11,127	.....	75,685
Boots and shoes *doz. pairs*	28,261	39,100	162,432	247,119
Other rubber manufactures	.....	219,455	.....	1,447,647
Totals	.....	£544,784	.....	£3,573,121

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber To—				
Russia	1,237,800	£54,014	3,436,100	£150,443
Sweden, Norway, and Denmark	70,800	3,642	1,006,800	46,893
Germany	1,695,000	79,326	17,219,600	769,315
Belgium	465,900	22,956	4,638,100	206,712
France	3,145,600	147,429	21,816,900	983,572
Spain	17,900	904	736,600	34,300
Italy	608,200	29,332	4,692,400	224,051
Other European countries	684,900	33,341	3,298,700	152,917
United States	1,258,000	51,122	6,480,500	269,073
Canada	.....	.....	2,900	131
Other countries	215,900	12,114	1,106,800	57,381
Totals	9,400,000	£434,180	64,435,400	£2,894,788
Gutta percha and balata	47,500	4,141	550,900	39,423
Waste and reclaimed rubber	4,200	69	137,300	2,155
Rubber substitutes	3,200	36	4,500	104
Totals	9,455,000	£438,426	65,128,100	£2,936,470
MANUFACTURED				
*††Tires and tubes				
Pneumatic				
Outer covers	.....	£10,712	.....	£38,721
Inner tubes	.....	2,330	.....	7,069
Solid tires	.....	22	.....	985
Boots and shoes *doz. pairs*	1,666	2,540	8,454	17,948
Other rubber manufactures	.....	5,439	.....	35,779
Totals	.....	£21,043	.....	£100,502

*After April 12, 1927, tires and tubes imported with complete vehicles, or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts and accessories were exempt from duty until Apr. 30, 1926, inclusive, and rubber tires and tubes until Apr. 11, 1927, inclusive.

‡Tires and tubes included prior to Apr. 12, 1927.

RUBBER
CRUDE
H. MUEHLSTEIN
& COMPANY, INC.
SCRAP
41 EAST 42ND STREET
NEW YORK
BRANCHES
CHICAGO
327 So. La Salle St.
AKRON
1111 Akron Savings & Loan Bldg
BOSTON
176 Federal St.
LOS ANGELES
728 So. Hill Street
NEW YORK
Liggett Bldg., 42nd. St. & Madison Ave.
LONDON E.C.2, ENGLAND
70 Finsbury Pavement
HAMBURG 36, GERMANY
Valentinskamp 74
WAREHOUSES
JERSEY CITY, N. J. and AKRON, OHIO

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COMPOUNDING INGREDIENTS

THE demand for compounding ingredients was well sustained during August. The seasonal reduction of tire and tube output was moderate while the production of mechanicals, footwear, weatherproofs, auto topping, insulated wire, and other products was well maintained. As a result, the movement of compounding ingredients was active and of good volume. The outlook is considered favorable for increased consumption of reclaim and compounding materials for the fall and winter months.

ACCELERATORS. The problem of accelerated cures in all lines is well solved for all types of compounds by the great variety of accelerators now available. Time and temperature conditions of cure, no less than tensile properties and aging quality of stocks, can be regulated by judicious selections from the large range of accelerators now available to the rubber compounder.

ANTIOXIDANTS. While the special value and adaptations of the various preservatives of vulcanized rubber were not so quickly recognized as those of accelerators of vulcanization, they are now credited by manufacturers as essential for assuring durability of rubber goods for service by sustaining the life of the material under various deteriorating influences.

BENZOL. The industrial demand has relaxed seasonally. The price remains firm and unchanged.

CARBON BLACK. The demand is steady chiefly from the rubber industry at prices firm and strong.

CLAY. This secondary cheap reenforcer is in strong consuming demand for use in standard lines of rubber goods.

DEGRAS. Better inquiry is noted, and the market is steady.

LITHARGE. August demand was routine, and buying was spotty.

LITHOPONE. Fair routine demand at firm prices.

MINERAL RUBBER. This material ranks with reclaim as a reliable adjuvant for rubber goods built for competitive service; accordingly it is continuously in excellent demand.

SOFTENERS. The numerous items of softeners recommended for rubber compounding offer ample variety in price and technical value to meet every compounding need.

SOLVENT NAPHTHA. This solvent is in moderate seasonal demand in the industry.

V. M. & P. NAPHTHA. This standard for rubber cement making is in seasonal movement at strong prices.

STEARIC ACID. Prices are firm and market strengthening. Demand active.

ZINC OXIDE. Demand steadily increased in volume during August. It is now active at strong prices.

New York Quotations

August 27, 1929

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09	@
Lead, red	lb.	.10¼	@
sublimed white	lb.	.08½	@
sublimed blue	lb.	.08½	@
super-sublimed white lead	lb.	.08¾	@
Lime, R. M. hydrated	ton	20.00	@
Litharge	lb.	.09¼	@
Magnesia, calcined heavy	ton	75.00	@
Magnesia carbonate	lb.	.06	@ .07
Orange mineral A.A.A.	lb.	.12¼	@

Accelerators, Organic

A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.	.80	@ .95
Aldehyde ammonia	lb.	.65	@ .70
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.		@
Paste	lb.		@
D. B. A.	lb.		@
Diorthotoluolguanadine	lb.	.42	@ .47
D. P. G.	lb.	.30	@ .35
Ethylidineaniline	lb.	.45	@ .47½
Formaldehydeaniline	lb.	.37½	@ .42½
Grasselerater 102	lb.		@
552	lb.		@
808	lb.		@
833	lb.		@
Heptene	lb.	.40	@
Hexamethylenetetramine	lb.	.48	@ .50
Lead oleate, No. 999	lb.	.155	@
Witco	lb.	.14	@
Lithex	lb.		@
Methylenedianiline	lb.		@
Monex	lb.		@
Plastone	lb.		@
R-2	lb.	2.00	@ 2.50
R. & H. 40	lb.		@
50	lb.		@
Safex	lb.		@
Super-sulphur, No. 1	lb.		@
No. 2	lb.		@
Tensilac No. 39	lb.		@
No. 41	lb.		@
Thermlo F	lb.		@
Thiocarbanilid	lb.	.23	@ .27
Trimene	lb.		@
base	lb.		@
Tuads	lb.		@
Waxene	lb.	.30	@ .40
ZBX	lb.		@
Z-88	lb.	.50	@ .60
Zimate	lb.		@

Acids

Acetic 28% (bbls.)	100 lbs.	3.88	@ 4.13
glacial (carboys)	100 lbs.	14.18	@14.43
Sulphuric, 66°	100 lbs.	1.60	@

Alkalies

Caustic soda, solid	100 lbs.	2.90	@

Antioxidants

Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Albasan	lb.	.70	@ .75
Antox	lb.		@

Antioxidants—*(Continued)*

Grasselerager A	lb.		@
Resistox	lb.	$0.54	@$0.65
Stabilite	lb.	.64	@
Sunproof	lb.	.35	@ .37½
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.07	@ .09
Carbon (see compounding ingredients)			
Drop (bbls.)	lb.	.05½	@ .15
Lampblack (commercial)	lb.	.07	@ .08

BLUE

Akco blue	lb.		@
Huber Brilliant	lb.	4.20	@ 4.70
Prussian	lb.	.35	@
Ultramarine	lb.	.10	@ .20

BROWN

Huber Mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

Akco green	lb.		@
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Huber Brilliant	lb.	4.35	@
Chromium Oxide	lb.	.33	@ .38

ORANGE

Huber Persian	lb.	.50	@ 1.00

RED

Akco red	lb.		@
Antimony Crimson	lb.		@
Sulphur free	lb.		@
Crimson, R. M. P. No. 3	lb.	.48	@
Sulphur, free	lb.	.52	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Golden	lb.	.16	@ .20
No. 60	lb.		@
15/17%	lb.		@
7-A	lb.	.35	@
Z-2	lb.	.20	@
Aristi	lb.		@
Huber Brilliant	lb.	1.35	@ 1.85
Iron Oxides			
bright pure domestic	lb.	.12	@
bright pure English	lb.	.12	@
bright reduced English	lb.	.10	@
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.10½	@
Indian (maroon), reduced English	lb.	.07	@ .09
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.03	@ .04¼
Sunburnt red	lb.	.14	@
Venetian reds	lb.	.02	@ .06
Vermilion, Eng. quicksilver	lb.	1.90	@ 2.05

Colors—*(Continued)*

WHITE

Lithopone	lb.	$0.05½	@$0.05¾
Albalith	lb.		@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05¾
Sterling	lb.		@
Vanolith	lb.		@
Titanox	lb.		@
Zinc Oxide			
AAA (lead free) (bbls.)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06¼	@ .06¾
Z (8% leaded)	lb.	.06¼	@ .06¾
Green seal	lb.		@
Kadox	lb.		@
Red seal	lb.		@
Special	lb.		@
White seal	lb.		@
XX green label	lb.		@
XX red label	lb.		@

YELLOW

Akco yellow	lb.		@
Cadmium sulphide	lb.	1.00	@ 1.40
Chrome	lb.	.17	@ .17½
Grasselli cadmium	lb.		@
Huber canary	lb.	3.30	@ 3.80
Ochre, domestic	lb.	.01¼	@ .02¼
Ochre, French	lb.	.02¼	@ .03
Oxide, pure	lb.	.08½	@
Zinc, C. P., imported	lb.	.23	@

Compounding Ingredients

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carb. pwd.	lb.	.11	@
lump	lb.	.10½	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	60.00	@
Baryta white (f.o.b. St. Louis, bbls.)	ton	23.00	@
Baryta white (f. o. b. St. Louis, paper bags)	ton	22.20	@
Barytes, pure white	ton	35.00	@
off color	ton	27.50	@
medium	ton	30.00	@
Foam "A" (f. o. b. St. Louis, bbls.)	ton	23.00	@
Foam "A" (f. o. b. St. Louis, bags)	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	42.50	@45.00
Carbon Black			
Aerfloted arrow	lb.	.08½	@ .12
Compressed	lb.	.06½	@ .12
Fumonex	lb.	.06	@ .09
Micronex	lb.	.07	@ .12
Uncompressed	lb.	.06½	@ .11
Velvetex	lb.	.04½	@ .06
Carrara filler	ton		@
Chalk	ton	12.00	@
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01¾	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	25.00	@
Suprex	ton	10.00	@22.00
Tensilite	ton		@

Compounding Ingredients *(Continued)*

Cotton flock, black	lb.	$0.13	@
light-colored	lb.	.10	@ .12
white	lb.	.12	@ .30
Glue, high grade	lb.	.25	@ .30
low grade	lb.	.16	@ .22
Infusorial earth	ton	45.00	@
Mica, amber	lb.	.04½	@
Neome pin, S. A. conc.	lb.	.60	@
Pumice stone, powd.	lb.	.02½	@ .04
Rottenstone, domestic	ton	23.50	@28.00
Shellac, fine orange	lb.	.70	@
Soapbark (cut)	lb.	.11½	@ .12
Soapstone	ton	15.00	@22.00
Talc, domestic	lb.	.01¼	@
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Whiting			
Domestic	100 lbs.	1.00	@
English, cliffstone	100 lbs.	1.50	@
Imported chalk	100 lbs.	.95	@ 1.50
Paris White, English cliffstone	100 lbs.	1.50	@ 2.50
Quaker	ton		@
Slate flour, gray (fact'y)	ton	7.00	@
Snow white	ton		@
Sussex	ton		@
Vancolloid	ton		@
Vansulite	ton		@
Westminster Brand	100 lbs.		@
Witco (l. c. l.) (f. o. b. New York)	ton	20.00	@

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.		@
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kopak, M. R. (f. o. b. factory)	ton	60.00	@
M-4 (f. o. b. fact'y)	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fact'y)	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00
Vansul Puro	ton	24.00	@

New York Quotations

August 27, 1929

Oils

Kerosene	gal.	$0.15	@
Mineral	gal.	.20	@
Poppy seed oil	gal.	1.65	@ 1.70
Rapeseed	gal.	.82	@
Red oil, distilled	lb.	.10½	@ .11⅛
Rubber process	gal.	.25	@
Spindle	gal.	.30	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.08	@ .15
White	lb.	.09	@ .16

Softeners

Burgundy pitch	100 lbs.	5.00	@ 6.00
Atlas	100 lbs.	6.50	@
Corn oil, crude	lb.	.09¾	@
Cottonseed oil	lb.	.11	@
Cycline oil	gal.	.26	@ .34
Degras	lb.	.03¾	@ .04¼
Fluxrite (fluid)	lb.		@
Moldrite	lb.		@
Palm oil (Lagos)	lb.	.09¼	@
Palm oil (Niger)	lb.	.08¾	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08¾	@ .08⅝
Pigmentar	lb.	.038	@ .0446
Pigmentaroil (tank cars, factory)	gal.	.21	@
(bbls., drums, l. c. l., factory)	gal.	.26	@
Pine oil, steam distilled	gal.	.61	@ .65
Pine tar (retort)	bbl.	11.50	@12.00
Rosin K (bbls.)	280 lbs.	8.72½	@
Rosin oil, compounded	gal.	.30	@
No. 3, deodorized	gal.	.60	@
No. 556, deodorized	gal.	.51	@
Rubite	lb.	.10	@
Rubtack	lb.	.08½	@
Stearex	lb.	.15	@ .19
Stearic acid, double pressed	lb.	.15½	@ .16
Tackol	lb.	.09	@ .15
Tasco W-S No. 1	lb.		●
A	lb.		●
Vansulol	lb.	.11½	@
Vantar (Pine Tar)	gal.	.35	@
Witco No. 20	gal.	.17	@
Woburn oil	lb.	.05½	@ .06

Solvents

Benzol (90% drums)	gal.	$0.28	@
Carbon bisulphide (drums)	lb.	.05½	@ .11
tetrachloride (drums)	lb.	.06½	@ .10
Cyclohexanone	lb.	.70	@
Dip-Sol	gal.	.1300	@
Dryolene, No. 9	gal.	.1100	@
Gasoline			
No. 303			
Tankcars	gal.	.15	@
Drums, c. l.	gal.		@
Drums, l. c. l.	gal.		@
Hexalin	lb.	.60	@
acetate	lb.	.70	@
Rub-Sol	gal.	.0850	@
Solvent naphtha	gal.	.35	@
Stod-Sol	gal.	.1050	@
Sweet rubber cement naphtha	gal.		@
Turpentine, Venice	lb.	.20	@
steam distilled	gal.	.51	@ .55½

Vulcanizing Ingredients

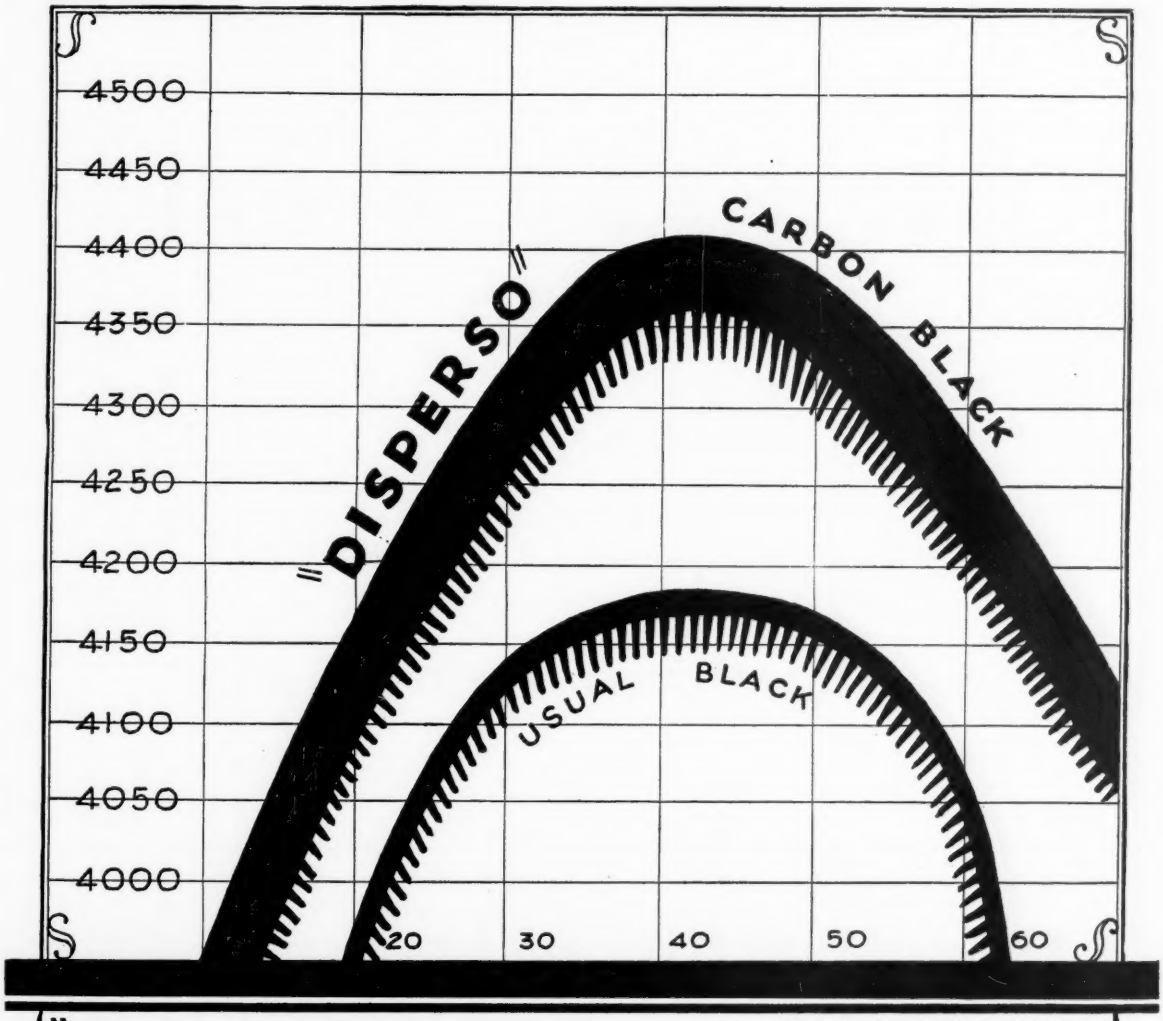
Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.		@
(l.c.l.)	100 lbs.		@
Superfine commercial flour (210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.40	@ 2.80
Tire brand, superfine,	100 lbs.	1.90	@ 2.25
Tube brand, velvet	100 lbs.	2.40	@ 2.75
Sulphur chloride	lb.	.05	@ .07
Vandex (selenium)	lb.		@
(See also Colors—Antimony)			

Waxes

Beeswax, white, com	lb.	.55	@
carnauba	lb.	.33	@
ceresine, white	lb.	.12½	@
montan	lb.	.07½	@
ozokerite, black	lb.	.28	@
green	lb.	.28	@
Paraffin			
122/124 crude, white scale	lb.	.03¾	@
124/126 crude, white scale	lb.	.04	@
123/125 fully refined	lb.	.04½	@
125/127 fully refined	lb.	.05	@

Rims Approved by Tire & Rim Association

Rim Size	July, 1929 Number	July, 1929 Per Cent	7 Months, 1929 Number	7 Months, 1929 Per Cent
Motorcycle				
24 x 3 "CC"	.....	....	10,464	0.1
24 x 3 Std.	.....	....	4,668	0.0
26 x 3 "CC"	.....	....	1,971	0.0
26 x 3 Std.	.....	....	1,035	0.0
28 x 3 "CC"	1,080	0.1	2,194	0.0
18 x 3 SS.	26	0.0	14,100	0.1
19 x 3 SS.	3,462	0.2	13,978	0.1
Clincher				
30 x 3½	35,046	1.8	170,470	1.1
31 x 4	.....	....	765	0.0
18" Balloons				
18 x 4	166,886	8.8	995,688	6.2
18 x 3.25	9,438	0.5	85,119	0.5
18 x 4½	18,172	1.0	254,084	1.6
18 x 5	5,598	0.3	59,226	0.4
19" Balloons				
19 x 2.75	45,720	2.4	264,320	1.7
19 x 3½	22,515	1.2	496,556	3.1
19 x 4	370,709	19.6	3,090,536	19.2
19 x 3.25	24,829	1.3	206,516	1.3
19 x 4½	122,487	6.4	494,550	3.1
19 x 5	11,414	0.6	86,584	0.5
20" Balloons				
20 x 2.75	495,569	26.1	4,180,201	26.0
20 x 3½	4,287	0.2	66,504	0.4
20 x 4	114,215	6.0	1,468,480	9.1
20 x 4½	15,975	0.8	252,843	1.6
20 x 5	1,503	0.1	225,942	1.4
20 x 6	1,190	0.1	36,973	0.2
20 x 6.75	.....	....	12,206	0.1
21" Balloons				
21 x 2.75	18,376	1.0	125,664	0.8
21 x 3½	15,301	0.7	197,913	1.2
21 x 4	5,505	0.3	51,439	0.3
21 x 4½	11,086	0.6	39,856	0.2
21 x 5	1,461	0.1	5,507	0.0
21 x 6	.....	....	2,505	0.0
22" Balloons				
22 x 4	.....	....	909	0.0
22 x 4½	.....	....	901	0.0
High Pressure				
30 x 3½—23	5,724	0.3	22,703	0.1
31 x 4 —23	.....	....	1,086	0.0
32 x 4½—23	2,616	0.1	32,334	0.2
32 x 4 —24	5,440	0.3	20,214	0.1
33 x 4½—24	98	0.0	98	0.0
32 x 3½—25	.....	....	1,056	0.0
34 x 4½—25	797	0.0	2,978	0.0
20" Truck				
30 x 5	264,663	14.0	2,421,857	15.0
32 x 6	33,534	1.8	313,862	1.9
34 x 7	20,543	1.1	122,720	0.8
36 x 8	16,587	0.9	87,629	0.5
40 x 10	.....	....	304	0.0
22" Truck				
36 x 7	1,027	0.1	2,951	0.0
38 x 8	1,616	0.1	8,726	0.1
24" Truck				
34 x 5	800	0.0	3,864	0.0
36 x 6	3,912	0.2	27,113	0.2
38 x 7	5,858	0.3	36,696	0.2
40 x 8	9,235	0.5	50,832	0.3
44 x 10	.....	....	246	0.0
Airplane				
8 x 3	184	0.0	429	0.0
12 x 3	.....	....	1,669	0.0
14 x 3	.....	....	101	0.0
16 x 3	.....	....	43	0.0
18 x 3	.....	....	581	0.0
16 x 3½	1,956	0.1	3,007	0.0
20 x 3½	27	0.0	4,095	0.0
20 x 4	.....	....	1,546	0.0
20 x 5	.....	....	221	0.0
20 x 6	103	0.0	637	0.0
20 x 8	.....	....	428	0.0
24 x 10	96	0.0	205	0.0
18 x 4 Clincher	.....	....	7,730	0.0
Totals	1,896,666	....	16,098,628	....



"DISPERSO" CARBON BLACK

THE above diagram graphically portrays the difference in the tensile strength of rubber containing "DISPERSO" CARBON BLACK as compared to that of ordinary carbon black. The curves of this graph were determined by practical tests, which convinced us that we had produced a carbon black that is a direct aid to the production of better rubber.

The exclusive WITCO process* represents a big step forward in the manufacture of carbon black. There you find the reason for the superiority of "DISPERSO" CARBON BLACK. All the occluded gases are eliminated.

increases the tensile strength of rubber

The use of "DISPERSO" CARBON BLACK assures better dispersion in the rubber, which directly increases the tensile strength with the same reinforcement hardness, and improves the abrasive qualities of the compound.

May we send you further information and samples, or let us demonstrate the advantages of "DISPERSO" CARBON BLACK.

*G. H. Wheatley Press. Patent No. 1542119

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Cotton and Fabrics

AMERICAN COTTON. The price of spot middling cotton on August 1 was 19.20 cents compared with 18.20 cents on July 1. This increase was attributed to fear of heavy damage by boll weevils.

During the month there was generally a slow decline in the price, which touched 18.00 cents on August 15. From that date the trend was upward. On August 26 spot middlings was 18.65 cents.

The dominant influence in the August cotton market was the government's report of the crop condition as of August 1. This report indicated a crop of 15,543,000 bales, allowing for weevil damage for the rest of the season at about the average of the boll weevil years.

EGYPTIAN COTTON. In Egypt the crop prospects are bright and the present expectation is for a slight increase of yield over last year. The carry-over in Egypt on September 1 should be approximately the same as a year ago. The only unfavorable news at the moment comes from the Egyptian Soudan where heavy rains have seriously delayed planting and may cause shortage later as much land already sown was badly washed.

ARIZONA COTTON. The Arizona crop is progressing well and a yield as large as last season is in prospect. There is very little business in staple cottons of any growth. The general disposition of the world's spinners is to await more definite news of crop prospects. American staples are offered for new crop shipment at slight concessions of price, but there are no anxious sellers as yet.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. This market has been quiet with very little change in prices.

RAINCOAT FABRICS. The raincoat trade has been dull for the past three months, but the usual fall revival is now due.

SHEETINGS. Although the raw cotton market has been erratic, the curtailment program in effect for some time past in the southern mills has been very successful in holding prices on a firm basis. Even better business is expected in the near future. With some manufacturing and commission concerns sales are running ahead of production.

TIRE FABRICS. From the middle of July to the last of August the demand for both Peeler and Egyptian cotton tire fabrics was seasonably small. Prices were light and the market steady. Some indication of improvement was noticeable from week to week in August. The fabric mills were reported running full.

The report of the Rubber Manufacturers' Association gave the consumption of tire fabric for the first half of the current year, by 75 per cent of the tire industry, as 20,358,937 pounds, total.

New York Quotations

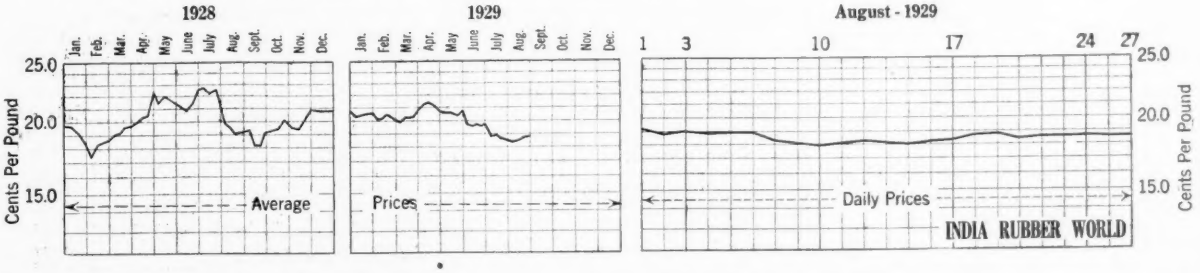
August 27, 1929

Drills		
38-inch 2.00-yard	*yard*	$0.16¾ @
40-inch 3.47-yard		**.10⅛ @**
50-inch 1.52-yard		.22⅜ @
52-inch 1.90-yard		.18⅛ @
52-inch 2.20-yard		.15⅞ @
59-inch 1.85-yard		.19½ @
Ducks		
38-inch 2.00-yard D. F.	*yard*	.17½ @
40-inch 1.45-yard S. F.		.23¾ @
72-inch 1.05-yard D. F.		.36⅝ @
72-inch 16.66-ounce		.39½ @
72-inch 17.21-ounce		.40⅜ @
MECHANICAL		
Hose and belting	*pound*	.37 @
TENNIS		
52-inch 1.35-yard	*yard*	.26½ @
Hollands		
R.T.5—30-inch	*yard*	.13½ @
R.T.7—36-inch		.15½ @
R.T.8—40-inch		.18½ @
48A—32-inch		.12½ @
48A—40-inch		.15½ @
RED SEAL		
36-inch		.15½ @
40-inch		.16½ @
50-inch		.25 @
GOLD SEAL		
40-inch, No. 72		.20¾ @
40-inch, No. 80		.22 @

Osnaburgs		
40-inch 2.35-yard	*yard*	$0.14½ @
40-inch 2.48-yard		.13¾ @
40-inch 3.00-yard		.11½ @
40-inch 10-oz. part waste	*lb.*	.18¼ @
40-inch 7-oz.	*lb.*	.12¾ @
37-inch 2.42-yard	*yard*	.14 @
Raincoat Fabrics		
COTTON		
Bombazine 64 x 60	*yard*	.10¾ @
Bombazine 60 x 48		.09¾ @
Plaids 60 x 48		.12½ @
Plaids 48 x 48		.11½ @
Surface prints 64 x 60		.13½ @
Surface prints 60 x 48		.12½ @
Print cloth, 38½-in., 60 x 48		.06½ @
Print cloth, 38½-in., 64 x 60		.07½ @
Sheetings, 40-inch		
48 x 48, 2.50-yard	*yard*	.12½ @
48 x 48, 2.85-yard		.11 @
64 x 68, 3.15-yard		.11¼ @
56 x 60, 3.60-yard		.09½ @
44 x 48, 3.75-yard		.08⅞ @
44 x 40, 4.25-yard		.07⅝ @
Sheetings, 36-inch		
48 x 48, 5.00-yard	*yard*	.06⅝ @ .06¾
44 x 40, 6.15-yard		.05½ @ .05⅞

Tire Fabrics		
SQUARE WOVEN 17¼-ounce		
Peeler, karded	*pound*	$0.47 @
BUILDER 23/11		
Peeler, karded	*pound*	.47 @
BUILDER 10/5		
Peeler, karded	*pound*	.44 @
CORD 23/5/3		
Peeler, karded, 1⅛-in.	*pound*	.46 @
CORD 23/4/3		
Peeler, karded	*pound*	.49 @
CORD 23/3/5		
Peeler, karded	*pound*	.50 @
CORD 15/3/5		
Peeler, karded	*pound*	.45 @
CORD 13/3/3		
Peeler, karded	*pound*	.44 @
LENO BREAKER		
8-oz. Peeler, karded	*pound*	.47 @
10-oz. Peeler, karded		.47 @
CHAFER		
9.5-oz. Peeler, karded	*pound*	.47 @
12-oz. Peeler, karded		.47 @
14-oz. Peeler, karded		.47 @

Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton



Century Carbon Black

Century brand carbon black is gas black possessing the uniformly reliable quality of superior reenforcing effect required for producing stocks particularly high in tensile, modulus, resilient energy, and abrasive wear resistance. It is produced from wells on 3,000 acres of proved gas acreage in Richland Parish, La. It is characteristically dry and of uniform color. Four new manufacturing units of thirty-two houses each, with a gasoline extraction plant now in operation, will supply 10,000,000 pounds of this black annually.

General Electric Supply Corp.

Effective October 1, the fourteen wholesale distributing corporations owned by the General Electric Co., Schenectady, N. Y., will be consolidated into the General Electric Supply Corp. (of Del.). These companies have for many years distributed General Electric products, and the plan involves no change of ownership. The consolidated corporation will be in a much better position to offer nation-wide service through its ability to serve from any one of seventy-six houses, through interchangeability of stocks, and speedier and more economical operation.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

JULY 15. By "American Farmer," London.

	Cases
General Rubber Co	271

JULY 15. By "Cedric," London.

General Rubber Co	7

JULY 15. By "Minnetonka," London.

General Rubber Co	214
H. Muehlstein & Co., Inc	353

JULY 15. By "Simaloer," Far East.

Robert Badenhop Corp	192
Paul Bertuch & Co., Inc	127
General Rubber Co	4,919
B. W. Henderson & Co., Inc	326
Chas. T. Wilson Co., Inc	19

JULY 16. By "Wilscox," Far East.

Chas. T. Wilson Co., Inc	350

JULY 17. By "Glenbank," Far East.

Robert Badenhop Corp	250
Bierrie & Co., Inc	159
General Rubber Co	112
Littlejohn & Co., Inc	1,764
The Meyer & Brown Corp	50
Raw Products Co	50
Chas. T. Wilson & Co., Inc	42

JULY 17. By "Montgomery City," Far East.

Robert Badenhop Corp	630
Baird Rubber & Trading Co., Inc	350
Bierrie & Co., Inc	350
General Rubber Co	5,959
Haldane & Co., Inc	750
B. W. Henderson & Co., Inc	368
Lavino American & Asiatic Co	300
Littlejohn & Co., Inc	4,122
The Meyer & Brown Corp	520
The Meyer & Brown Corp	*400
H. Muehlstein & Co., Inc	143
Poel & Kelly, Inc	68
Raw Products Co	50
Rogers Brown & Crocker Bros., Inc	407
Chas. T. Wilson Co., Inc	416

JULY 17. By "Oakbank," Far East.

Robert Badenhop Corp	112
Baird Rubber & Trading Co., Inc	230
Bierrie & Co., Inc	362
General Rubber Co	3,501
Haldane & Co., Inc	100
B. W. Henderson & Co., Inc	1,279
Lavino American & Asiatic Co	250
Littlejohn & Co., Inc	2,928
The Meyer & Brown Corp	1,570
H. Muehlstein & Co., Inc	2,400
Poel & Kelly, Inc	*175
Raw Products Co	40
Rogers Brown & Crocker Bros., Inc	895
Chas. T. Wilson Co., Inc	320

JULY 18. By "Mahseer," Far East.

Baird Rubber & Trading Co., Inc	50
General Rubber Co	570
Littlejohn & Co., Inc	400
The Meyer & Brown Corp	*400
Chas. T. Wilson Co., Inc	593

JULY 19. By "Tapanoeli," Far East.

H. A. Astlett & Co	1,529
Robert Badenhop Corp	300
Bierrie & Co., Inc	648
General Rubber Co	3,022
Hood Rubber Co	*275
Littlejohn & Co., Inc	1,871
The Meyer & Brown Corp	663
The Meyer & Brown Corp	*136
H. Muehlstein & Co., Inc	1,100
Poel & Kelly, Inc	266
Poel & Kelly, Inc	*506
Rogers Brown & Crocker Bros., Inc	188
Chas. T. Wilson Co., Inc	92

JULY 20. By "Greystoke Castle," Far East.

H. A. Astlett & Co	3,080
Robert Badenhop Corp	1,728
Bierrie & Co., Inc	1,150
General Rubber Co	4,689
B. W. Henderson & Co., Inc	569
Hood Rubber Co	136
Littlejohn & Co., Inc	6,232
The Meyer & Brown Corp	2,208
The Meyer & Brown Corp	*330
H. Muehlstein & Co., Inc	450
Poel & Kelly, Inc	250
Raw Products Co	1,161
Rogers Brown & Crocker Bros., Inc	1,350
Chas. T. Wilson Co., Inc	818

JULY 20. By "Marengo," Far East.

General Rubber Co	267

JULY 21. By "Baltic," Liverpool.

General Rubber Co	102

JULY 22. By "City of Florence," Far East.

H. A. Astlett & Co	3,279
Robert Badenhop Corp	787
Baird Rubber & Trading Co., Inc	50
Bierrie & Co., Inc	468
General Rubber Co	7,591
Haldane & Co., Inc	1,250
B. W. Henderson & Co., Inc	357
Hood Rubber Co	215
Littlejohn & Co., Inc	5,048
The Meyer & Brown Corp	1,787
The Meyer & Brown Corp	*584
H. Muehlstein & Co., Inc	840
Poel & Kelly, Inc	680
Raw Products Co	400
Rogers Brown & Crocker Bros., Inc	1,165
Chas. T. Wilson Co., Inc	788

JULY 22. By "Koranna," Far East.

Robert Badenhop Corp	150
Bierrie & Co., Inc	224
General Rubber Co	112
B. W. Henderson & Co., Inc	112
Littlejohn & Co., Inc	112

JULY 23. By "Bengkalis," Far East.

H. A. Astlett & Co	†68
Robert Badenhop Corp	†400
General Rubber Co	†100
Littlejohn & Co., Inc	†715
The Meyer & Brown Corp	†1,000
H. Muehlstein & Co., Inc	†1,310

JULY 23. By "Dacre Castle," Far East.

H. A. Astlett & Co	1,194
Robert Badenhop Corp	929
Baird Rubber & Trading Co., Inc	100
Baird Rubber & Trading Co., Inc	*50
Bierrie & Co., Inc	530
General Rubber Co	4,347
Haldane & Co., Inc	850
B. W. Henderson & Co., Inc	310
Littlejohn & Co., Inc	3,163
The Meyer & Brown Corp	1,363
Raw Products Co	100
Rogers Brown & Crocker Bros., Inc	518
Chas. T. Wilson Co., Inc	495

JULY 23. By "Pres. Polk," Far East.

H. A. Astlett & Co	772
Robert Badenhop Corp	1,180
Bierrie & Co., Inc	350
General Rubber Co	1,504
B. W. Henderson & Co., Inc	570
Hood Rubber Co	100
Lavino American & Asiatic Co	250
Littlejohn & Co., Inc	3,146
The Meyer & Brown Corp	1,989
Raw Products Co	80
Rogers Brown & Crocker Bros., Inc	555
Chas. T. Wilson Co., Inc	540

JULY 25. By "Sheridan," Far East.

B. W. Henderson & Co., Inc	34

JULY 26. By "Neleus," Far East.

H. A. Astlett & Co	2,429
Robert Badenhop Corp	757
Baird Rubber & Trading Co., Inc	150
Baird Rubber & Trading Co., Inc	*50
Bierrie & Co., Inc	1,006
General Rubber Co	2,631
Haldane & Co., Inc	750
B. W. Henderson & Co., Inc	400
Lavino American & Asiatic Co	280
Littlejohn & Co., Inc	4,205
The Meyer & Brown Corp	800
H. Muehlstein & Co., Inc	250
Poel & Kelly, Inc	190
Rogers Brown & Crocker Bros., Inc	1,380
Rogers Brown & Crocker Bros., Inc	*250
Chas. T. Wilson Co., Inc	208

JULY 26. By "Pres. Pierce," Far East.

H. A. Astlett & Co	†500
Robert Badenhop Corp	†150
Littlejohn & Co., Inc	†165
The Meyer & Brown Corp	†1,400

JULY 27. By "Statendam," Far East.

Robert Badenhop Corp	143

JULY 28. By "Carmania," Europe.

H. A. Astlett & Co	105
General Rubber Co	30

JULY 29. By "Minnewaska," London.

H. A. Astlett & Co	220
Chas. T. Wilson Co., Inc	171

JULY 29. By "Silverhazel," Far East.

H. A. Astlett & Co	1,649
Robert Badenhop Corp	520
Baird Rubber & Trading Co., Inc	350
Paul Bertuch & Co., Inc	1,000
Bierrie & Co., Inc	907
General Rubber Co	5,604
Haldane & Co., Inc	850
B. W. Henderson & Co., Inc	25
Lavino American & Asiatic Co	400
Littlejohn & Co., Inc	4,098
The Meyer & Brown Corp	2,303
Poel & Kelly, Inc	240
Rogers Brown & Crocker Bros., Inc	627
Rogers Brown & Crocker Bros., Inc	*400
Chas. T. Wilson Co., Inc	783

JULY 29. By "Tymeric," Far East.

H. A. Astlett & Co	77
Robert Badenhop Corp	75
General Rubber Co	74
Littlejohn & Co., Inc	364
The Meyer & Brown Corp	112
Poel & Kelly, Inc	860

JULY 31. By "Albertic," Liverpool.

H. A. Astlett & Co	64
Lavino American & Asiatic Co	120
Chas. T. Wilson & Co., Inc	44

AUG. 3. By "Silverlarch," Far East.

H. A. Astlett & Co	110
Robert Badenhop Corp	2,001
General Rubber Co	†300
Littlejohn & Co., Inc	†800
H. Muehlstein & Co., Inc	1,800

AUG. 5. By "Minnesota," London.

General Rubber Co	28
H. Muehlstein & Co., Inc	184

AUG. 5. By "Tuscania," London.

Chas. T. Wilson Co., Inc	138

AUG. 6. By "Cottica," Far East.

Middleton & Co., Ltd	10

AUG. 6. By "Pres. Adams," Far East.

H. A. Astlett & Co	910
Robert Badenhop Corp	195
Baird Rubber & Trading Co., Inc	28
Bierrie & Co., Inc	101
General Rubber Co	1,071
Haldane & Co., Inc	250
Hood Rubber Co	*70
Lavino American & Asiatic Co	150
Littlejohn & Co., Inc	2,998
The Meyer & Brown Corp	1,574
H. Muehlstein & Co., Inc	150
Rogers Brown & Crocker Bros., Inc	760
Chas. T. Wilson Co., Inc	334

AUG. 7. By "City of Winnipeg," Far East.

H. A. Astlett & Co	30
Littlejohn & Co., Inc	552

AUG. 7. By "President Taft," Far East.

General Rubber Co	†259
Littlejohn & Co., Inc	1,485
The Meyer & Brown Corp	†255

AUG. 9. By "Peleus," Far East.

H. A. Astlett & Co	1,305
Robert Badenhop Corp	193
Baird Rubber & Trading Co., Inc	116
Paul Bertuch & Co., Inc	51
Bierrie & Co., Inc	601
General Rubber Co	1,674
Haldane & Co., Inc	686
Hood Rubber Co	*226
Lavino American & Asiatic Co	22
Littlejohn & Co., Inc	3,028
The Meyer & Brown Corp	1,129
The Meyer & Brown Corp	*486
H. Muehlstein & Co., Inc	350
Raw Products Co	261
Rogers Brown & Crocker Bros., Inc	913
Rogers Brown & Crocker Bros., Inc	*103
Chas. T. Wilson Co., Inc	850

AUG. 10. By "Breedyk," Far East.

H. A. Astlett & Co	35
Bierrie & Co., Inc	330
General Rubber Co	6,518
Haldane & Co., Inc	102
Littlejohn & Co., Inc	970
The Meyer & Brown Corp	51
H. Muehlstein & Co., Inc	900
Rogers Brown & Crocker Bros., Inc	240
Chas. T. Wilson Co., Inc	131

*Arrived at Boston.
†Arrived at Los Angeles.

	Cases
Aug. 10. By "Goldensun," Far East.	
Robert Badenhop Corp.	†1,000
Littlejohn & Co., Inc.	†500
Aug. 11. By "Imperial Prince," Far East.	
H. A. Astlett & Co.	2,420
Robert Badenhop Corp.	1,050
Baird Rubber & Trading Co., Inc.	50
Paul Bertuch & Co., Inc.	650
Bierrie & Co., Inc.	50
General Rubber Co.	2,188
Haldane & Co., Inc.	310
Hood Rubber Co.	190
Lavino American & Asiatic Co.	500
Littlejohn & Co., Inc.	6,194
The Meyer & Brown Corp.	2,530
The Meyer & Brown Corp.	*1,194
H. Muehlstein & Co., Inc.	1,725
Raw Products Co.	80
Rogers Brown & Crocker Bros., Inc.	756
Chas. T. Wilson Co., Inc.	713
Aug. 12. By "Minnetonka," London.	
Littlejohn & Co., Inc.	120
Aug. 13. By "Bintang," Far East.	
H. A. Astlett & Co.	†50
Robert Badenhop Corp.	†200
General Rubber Co.	†300
H. Muehlstein & Co., Inc.	†300

*Arrived at Boston.
†Arrived at Los Angeles.

	Cases
Aug. 13. By "Steel Navigator," Far East.	
H. A. Astlett & Co.	2,280
Robert Badenhop Corp.	1,601
Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	600
General Rubber Co.	1,313
Hood Rubber Co.	70
Lavino American & Asiatic Co.	100
Littlejohn & Co., Inc.	1,846
The Meyer & Brown Corp.	1,360
The Meyer & Brown Corp.	*300
H. Muehlstein & Co., Inc.	450
Raw Products Co.	30
Rogers Brown & Crocker Bros., Inc.	1,400
Rogers Brown & Crocker Bros., Inc.	*100
Chas. T. Wilson Co., Inc.	310
Aug. 14. By "Silverash," Far East.	
H. A. Astlett & Co.	1,950
Robert Badenhop Corp.	850
Bierrie & Co., Inc.	686
General Rubber Co.	2,370
Littlejohn & Co., Inc.	4,305
H. Muehlstein & Co., Inc.	1,300
Rogers Brown & Crocker Bros., Inc.	1,785
Aug. 15. By "Salabangka," Far East.	
H. A. Astlett & Co.	400
Robert Badenhop Corp.	475
Hood Rubber Co.	*263
Aug. 16. By "Malakuta," Far East.	
H. A. Astlett & Co.	250
The Meyer & Brown Corp.	*400

Guayule

	Cases
July 22. By "El Norte," Mexico.	
Continental Rubber Co. of N. Y.	560
July 23. By "El Oriente," Mexico.	
Continental Rubber Co. of N. Y.	560
July 31. By "El Coston," Mexico.	
Continental Rubber Co. of N. Y.	560
Aug. 9. By "El Norte," Mexico.	
Continental Rubber Co. of N. Y.	560
Aug. 16. By "El Occidente," Mexico.	
Continental Rubber Co. of N. Y.	560

Rubber Latex

July 17. By "Montgomery City," Far East.	
General Rubber Co.	gals. 29,062
July 23. By "Dacre Castle," Far East.	
General Rubber Co.	gals. 33,998
July 29. By "Silverhazel," Far East.	
General Rubber Co.	gals. 146,285
Aug. 13. By "Steel Navigator," Far East.	
General Rubber Co.	gals. 64,157
Aug. 14. By "Silverash," Far East.	
General Rubber Co.	gals. 143,691

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
July 18. By "Dunstaffnage," South America.					
H. A. Astlett & Co.	41	....	....	....	....
Paul Bertuch & Co., Inc.	660	....	....	....	....
Littlejohn & Co., Inc.	768	1	....	88	....
The Meyer & Brown Corp.	65	....	....	....	....
July 24. By "Bangu," South America.					
H. A. Astlett & Co.	....	....	....	146	....
Paul Bertuch & Co., Inc.	73	....	....	....	....
July 29. By "Alban," South America.					
H. A. Astlett & Co.	157	5	117	279	....
Paul Bertuch & Co., Inc.	20	....	....	....	....
General Rubber Co.	381	2	115	66	*4
Littlejohn & Co., Inc.	322	2	4	597	....
July 29. By "Dominic," South America.					
H. A. Astlett & Co.	5	....	....	....	....
July 30. By "American Legion," South America.					
Paul Bertuch & Co., Inc.	240	....	20	....	....
August 14. By "Swinburne," South America.					
General Rubber Co.	194	....	....	....	....
Littlejohn & Co., Inc.	155	....	....	....	....
The Meyer & Brown Corp.	490	....	....	....	....

*Mixed.

United States Crude and Waste Rubber Imports for 1929 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1929	Total 1928	Balata	Miscellaneous	Waste
January ....tons	51,202	1,055	30	5	.....	13	52,305	46,243	67	799	181
February	63,851	530	60	97	.....	..	64,538	29,445	80	1,220	319
March	51,661	2,112	15	36	.....	..	53,824	40,894	85	825	70
April	53,256	844	8	4	59	..	54,171	37,240	87	1,606	609
May	47,940	1,078	54	49	59	..	49,180	32,883	88	1,013	230
June	43,313	1,032	44	1	100	..	44,490	25,792	91	1,323	215
July	43,130	931	..	57	134	..	44,252	33,382	75	1,044	274
Total seven months, 1929....tons	354,353	7,582	211	249	352	13	362,760	.....	573	7,830	1,898
Total seven months, 1928....tons	234,025	7,355	695	439	3,364	1	.....	245,879	727	5,983	1,746

Compiled from Rubber Manufacturers Association statistics.

World Rubber Stocks

Producing Centers	Long Tons—1929 Feb.	Mar.	Apr.	May	June	July
Singapore	27,177	25,326	23,202	26,764	25,641	28,950
Penang	5,196	4,111	4,137	5,168	6,220	6,523
Para	3,881	3,518	3,392	3,310	4,475	3,658
Totals	36,254	32,955	30,731	35,242	36,336	39,131
Manufacturing Centers						
London	25,554	28,214	31,368	31,290	30,982	30,937
Liverpool	4,105	4,326	4,590	4,538	4,628	4,662
Amsterdam	1,119	944	931	1,315	1,560	.....
United States	90,058	100,537	107,659	97,192	92,062	95,536
Plantation Afloat*.	87,250	85,700	91,200	83,290	76,300	.....
Totals	208,086	219,721	235,748	217,625	205,532	.....
Grand totals	244,340	252,676	266,479	252,867	241,868	.....

*W. H. Rickinson & Son, *The World's Rubber Position.*
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

A Durable Plate with Good Printing Qualities Is Made by Molding rubber in a stereotype-paper mold with suitable backing to resist heat and pressure and the surface treated with a 2 per cent solution of nitro-cellulose in acetone. British Patent No. 295,927, May 18, 1928.

Netherlands East Indies Exports

	Total Jan.-Apr. 1928	Total Jan.-Apr. 1929	Long Tons—1929 Jan.	Feb.	Mar.	Apr.
Java and Madura	16,941	23,724	5,640	6,572	5,515	5,997
Sumatra East Coast.	25,913	28,843	8,067	7,511	6,620	6,645
Other N. E. I.*						
Atjeh	1,279	1,492	416	338	343	395
Riouw	2,686	3,538	1,098	822	797	821
Djambi	9,515	9,586	2,643	2,012	2,314	2,617
Palembang	5,211	7,368	1,949	2,038	1,968	1,413
Lampongs	933	1,056	230	321	230	275
Benkoelen	15	16	3	3	4	6
Sumatra West Coast	510	452	123	132	102	95
Tapanoeli	1,783	2,219	542	612	539	526
Banka	285	279	76	46	126	31
Billiton	37	35	11	4	14	6
W. Coast Borneo.	5,272	8,499	2,078	1,965	2,027	2,429
S. and E. Borneo.	7,993	9,365	2,352	2,219	2,200	2,594
Menado	67	62	3	17	24	18
Celebes	16	31	6	7	12	66
Amboino	13	11	1	4	1	5
Totals	35,615	44,009	11,531	10,540	10,701	11,297
Grand totals	78,469	96,576	25,238	24,623	22,836	23,939

*Including shipments of wet native rubber from which a deduction of approximately 33⅓ per cent must be made in order to reduce to a dry basis.

Rubber Questionnaire

Second Quarter 1929*

Reclaimed Rubber	Inventory at End of Quarter (Long Tons)	Production (Long Tons)	Shipments (Long Tons)	Consumption (Long Tons)
Reclaimed solely (8)	5,113	25,726	25,381	51
Manufacturers who also reclaim (26)	6,455	32,034	13,059	24,108
Other manufacturers (79)	4,878	.....	.....	21,318
Totals	16,446	57,760	38,440	45,477

Scrap Rubber	Inventory (Long Tons)	Consumption (Long Tons)	Due on Contract (Long Tons)
Reclaimers solely (8)	26,897	33,838	13,840
Manufacturers who also reclaim (22)	34,141	40,454	17,563
Other manufacturers (9)	391	.....	.....
Totals	61,429	74,292	31,403

TONS OF RUBBER CONSUMED IN RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS

Products Tires and Tire Sundries:	Crude Rubber Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Automobile and motor truck pneumatic casings	89,261	$165,571,000
Automobile and motor truck pneumatic tubes	17,038	24,011,000
Motorcycle tires (casings and tubes)	87	426,000
Bicycle tires (single tubes, casings, and tubes)	279	785,000
Aeroplane casings and tubes	60	144,000
Solid and cushion tires	2,733	5,049,000
All other solid tires	293	747,000
Tire sundries and repair materials	1,317	4,141,000
Totals	111,068	$200,874,000

Products Other Rubber Products:	Crude Rubber Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Mechanical rubber goods	6,022	$30,926,000
Boots and shoes	4,740	22,303,000
Insulated wire and insulating compounds	717	7,734,000
Druggists' sundries, medical, and surgical rubber goods	487	1,957,000
Stationers' rubber goods	375	646,000
Bathing apparel	223	1,597,000
Rubber clothing	369	1,868,000
Automobile fabrics	365	3,021,000
Other rubberized fabrics	512	2,099,000
Hard rubber goods	317	1,640,000
Heels and soles	1,471	5,895,000
Rubber flooring	298	1,137,000
Sporting goods, toys, and novelties	430	2,676,000
Miscellaneous, not included in any of the above items	755	3,461,000
Totals	17,081	$86,960,000
Grand totals—all products	128,149	$287,834,000

INVENTORY OF RUBBER IN THE UNITED STATES AND AFLOAT

On Hand	Plantation (Long Tons)	Para (Long Tons)	All Other (Long Tons)	Totals (Long Tons)
Manufacturers	66,186	3,151	1,261	70,598
Importers and dealers	23,172	1,426	323	24,921
Totals on hand	89,358	4,577	1,584	95,519
Afloat				
Manufacturers	15,663	....	....	15,663
Importers and dealers	26,738	273	45	27,056
Totals afloat	42,401	273	45	42,719

*Number of rubber manufacturers that reported data was 151; crude rubber importers and dealers, 44; reclaimers (solely), 8; total daily average number of employes on basis of third week of April, 1929, was 170,856.

It is estimated that the reported grand total crude rubber consumption and the grand total sales value figures to be approximately 92 per cent; the grand total crude rubber inventory and afloat figures 95 per cent; the reclaimed rubber production 93 per cent, reclaimed consumption 73 per cent and reclaimed inventory 78 per cent of the total for the entire industry.

Compiled from statistics supplied by the Rubber Manufacturers Association, Inc.

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Bardol, a new dispersing oil for rubber compounding, is a coal tar product, specific gravity about 1.08; is limpid at 40° F.; flash point above 212° F.; and distills less than 1 per cent at 210° C. It is particularly recommended for the dispersion of carbon black in rubber as it imparts smooth calendering and tubing properties to the stock. Owing to its unique action in rubber mixings a larger percentage of it may be used without impairing the quality of the compound.

World Rubber Production—Net Exports

British Malaya:	Total 1928 (Long Tons)	Feb. (Long Tons—1929)	Mar.	Apr.	May	June	July
Gross exports	409,500	47,926	49,448	49,816	43,960	40,398	46,454
Imports	149,787	12,103	14,553	11,414	15,593	14,344	15,071
Net	259,713	35,823	34,895	38,402	28,367	26,054	31,383
Ceylon	57,267	6,943	6,713	4,676	4,850	6,051	5,746
India and Burma	10,790	1,117	1,413	727	800	.....	.....
Sarawak	10,087	955	758	747	966	1,061	1,247
B. N. Borneo	6,698	*500	*500	*500	*500	*500	*500
Siam	4,813	495	499	306	453	422	462
Java and Madura	58,848	6,572	5,515	5,997	6,264	5,582	.....
Sumatra E. Coast	82,511	7,511	6,620	6,645	6,961	6,693	.....
Other N. E. Indies	121,671	10,384	10,629	11,321	13,437	11,270	.....
French Indo-China	9,616	965	741	568	650	608	555
Amazon Valley	21,129	2,104	2,332	1,950	1,922	1,398	1,457
Other America	1,490	179	155	57	64	5	.....
Mexican Guayule	3,076	—	—	83	125	145	.....
Africa	6,124	341	631	429	544	.....	.....
Totals	653,833	73,889	71,401	.....	.....	.....	.....

*Estimated.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

	Total 1928 (Long Tons)	Feb. (Long Tons—1929)	Mar.	Apr.	May	June
Australia	8,430	1,131	725	1,518	1,437	2,215
Belgium	7,958	627	931	750	854	672
Canada	30,447	2,908	4,961	3,177	2,937	3,075
Czechoslovakia	3,138	356	409	445	277	.....
Denmark	566	49	60	62	57	74
Finland	768	34	5	104	101	86
France	36,498	5,001	4,409	4,854	3,152	.....
Germany	37,855	4,613	4,586	5,351	3,682	3,948
Italy	12,433	1,259	1,515	1,407	1,417	1,624
Japan	25,621	2,727	2,630	2,308	2,314	.....
Netherlands	2,243	113	316	144	201	687
Norway	728	48	55	63	73	.....
Russia	15,134	684	716	703	.....	.....
Spain	3,178	115	80	40	37	.....
Sweden	2,356	95	234	727	237	286
United Kingdom	4,846	5,179	9,068	8,295	5,112	5,361
United States	404,496	61,331	46,391	52,447	48,350	38,676
U. S. (Guayule)	3,076	—	—	83	125	145
Totals	599,771	86,270	77,091	82,479	.....	.....

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

British Malaya

RUBBER EXPORTS

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in July last totaled 46,454 tons as compared with 40,398 tons in June last, and 30,405 tons in the corresponding period of 1928. The amount of rubber imported was 15,071 tons, of which 11,616 tons were declared as wet rubber. The following are comparative statistics:

	1928 Gross Exports (Tons)	1928 Foreign Imports (Tons)	1929 Gross Exports (Tons)	1929 Foreign Imports (Tons)
January	27,731	16,618	52,546	13,415
February	28,813	12,911	47,926	12,103
March	27,813	10,508	49,448	14,553
April	20,029	9,335	49,816	11,414
May	26,403	10,350	43,960	15,593
June	22,930	16,168	40,398	14,344
July	30,405	13,383	46,454	15,071
Totals	184,124	89,273	330,548	96,493

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of June and July:

	June, 1929 Tons	July, 1929 Tons
United Kingdom	7,242	11,734
United States	26,883	26,108
Continent of Europe	3,969	4,779
British Possessions	898	783
Japan	1,287	2,972
Other foreign countries	119	78
Totals	40,398	46,454

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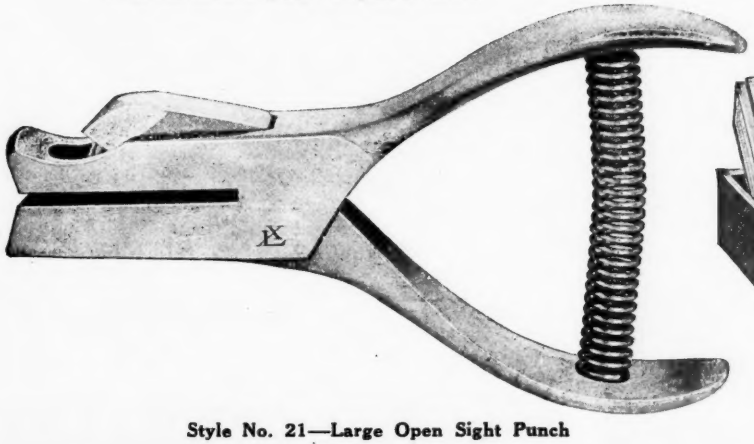

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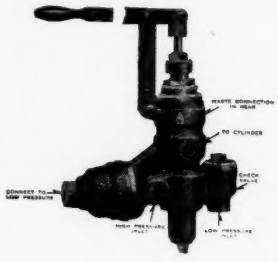

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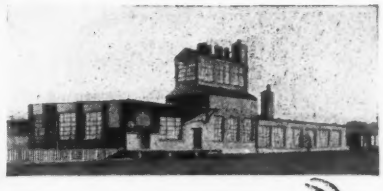

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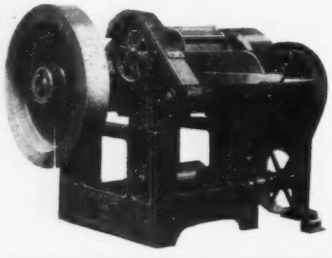

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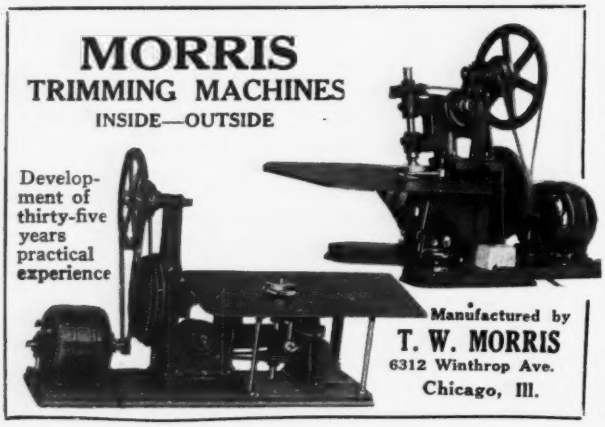

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The following papers have appeared in Vol. 4 of the "I. R. I. Transactions":

Vol. 4. No. 1. (June, 1928)

"The Colouring of Cold Cured Rubber," W. E. Sanderson, A.I.C.
"A Survey of Modern Synthetic Resins," A. A. Drummond, M.Sc., A.I.C.
"The Application of Paint and Varnish to Rubber Products," A. Linz.
"Organic Rubber Colours," Dr. W. J. S. Naunton.
"A Scheme of Accelerator Classification," R. P. Dinsmore, F.I.R.I., and W. W. Vogt.

Vol. 4. No. 2. (August, 1928)

"Vulcanisation Problems," Alfred A. Perks, B.Sc., F.I.R.I.
"Heat Transmission," Colin Macbeth, M.I.A.E., M.S.A.E., F.I.R.I.
"Rubber as a Floor Covering," J. Kirkwood, A.I.R.I. (Tech.).
"Single Texture Proofing," E. P. Rydings, B.Sc., A.I.C., F.I.R.I.
"Pressure Volcanisation," F. H. Amende, A.I.R.I. (Eng.).
"Factory Observations," J. A. Watson, F.I.C., A.C.G.I.
"Moulded Rubber Goods," R. Clark, A.I.C.
"The Discolouration of Zinc Oxide on Vulcanisation," J. A. Robertson, A.I.C.
"Note on the Two-Accelerator Effect," E. Anderson, F.I.C.

Vol. 4. No. 3. (October, 1928)

"Methods of Determining Abrasion," L. J. Lambourn, M.Sc., A.Inst.P., A.I.R.I. (Sc.).
"The Stickiness of Unvulcanised Rubber," R. W. Griffiths, B.Sc., A.Inst.P., A.I.R.I. (Sc.) and Maldwyn Jones, B.Sc.
"Band Tyres," T. S. Gardner.
"Effect of Temperature on the Stress-strain Properties of Vulcanised Rubber," Dr. A. A. Somerville and W. H. Cope.

Vol. 4. No. 4. (December, 1928)

(Communication) "A Note on the Effect of Sunlight on the Colour of Cured and Uncured Accelerated Mixes," R. Defries and W. J. S. Naunton, Ph.D., M.Sc., F.I.C., F.I.R.I.
"The Influence of Zinc Oxide on the Co-efficient of Vulcanisation," S. A. Brazier, M.Sc., F.I.C., F.I.R.I., and L. R. Ridgway, Ph.D., M.Sc., A.I.C.
"Electrical Insulating Materials from a Chemical Standpoint," W. H. Nuttall, F.I.C.
"Rubber Patents in Relation to the Patents and Designs Acts," H. D. Elkington, M.Sc., F.I.C.
"Making Rubber Goods of Latex by Electro-Deposition," Dr. Paul Klein.

Vol. 4. No. 5. (February, 1929)

"Note on the Behaviour of Prussian Blue and some other Ferrocyanides in Rubber," Dr. J. R. Scott.
"Pigment Reinforcement," R. W. Lunn, M.Sc., F.I.R.I.
"The Tackiness of Unvulcanised Rubber," T. L. Garner, M.Sc., A.I.R.I. (Sc.).
"China Clay as a Reinforcing Agent in Rubber Compounding," Dr. T. J. Drakeley and W. F. O. Pollett. B.Sc.

Vol. 4. No. 6. (April, 1929)

(Communication) "Note on Ageing Tests for Sponge Rubber," Dr. Henry P. Stevens.
(Communication) "Studies in the Oxidation of Rubber Mixings," W. Cecil Davey, M.Sc., A.I.C., A.I.R.I. (Sc.).
"Colloidal Chemical Changes in Rubber and Fatty Oils," Dr. Laszlo Auer.
"The Distribution of Ingredients in Rubber Mixings," H. Page, A.I.R.I. (Sc.).
"Chemical Reactions in Rubber Compounds," W. H. Reece, B.Sc., A.I.R.I. (Sc.).
"Physical Characteristics of Sponge Rubber," H. F. Church, B.Sc.

The following are a few of the papers that will appear in Volume 5:

"Ageing of Cotton Contained in Rubber Goods," Dr. Guy Barr.
"Heats of Combustion of Rubber, Gutta Percha & Balata," T. H. Messenger, M.Sc., A.R.C.S.
"Steam Production and Economy in the Rubber Factory," G. B. Williamson, M.I.Mech.E.
"Some Problems in Connection with Proofing," A. B. Hatton, B.Sc., D.I.C., A.I.C.
"An Appreciation and Criticism of the Motor Tyre," W. W. Hamill.
"Swelling of Vulcanised Rubber in Liquids," Dr. J. R. Scott.
"Acetylene Black Compared with Gas Black and Lamp Black." T. R. Dawson, M.Sc., F.I.C., F.I.R.I.
"Antioxidants," Dr. W. J. S Naunton.
"The Solvatation of Rubber and Rubber Compounds," Dr. Paul Stamberger.
"The Pigmentation of Rubber," G. F. Thompson, A.I.R.I. (Sc.).

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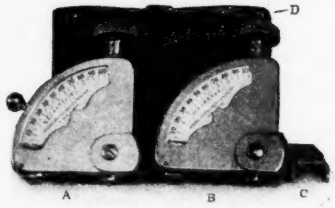

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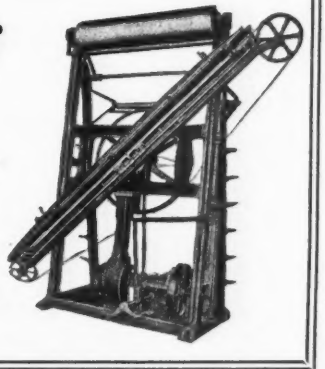

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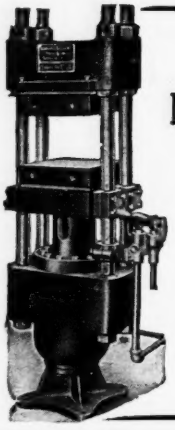

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SWEDTEX & CALTEX LEATHERETTE

CLIFTON

Gem Duck
Shoe Tapes
Friction Tape
Splicing Compounds

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65 Brookside Ave. BOSTON, MASS.

"PAHRAH" RECLAIM HIGH TENSILE LOW GRAVITY

Bloomingdale Rubber Co.
ESTABLISHED 1879
501 Fifth Avenue New York, N. Y.

THE H. O. CANFIELD CO.

MANUFACTURE

Molded Specialties, Plumbers' Rubber Goods, Valves, Gaskets, Hose Washers, and Cut Washers of all kinds

Write for prices and samples

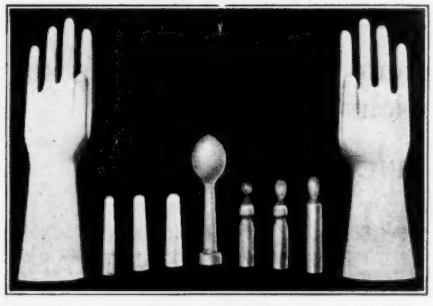
Offices and Works - Bridgeport, Conn.

S. P. VITRIFIED PORCELAIN FORMS

GUARANTEED AGAINST CRAZING

Largest exclusive manufacturers of Vitrified Porcelain forms for Rubber Dipped Goods. Most Manufacturers use our forms. Repeat orders testify to high quality.

Manager's experience 26 years. Write us your wants.



SEVILLE PORCELAIN CO., SEVILLE, OHIO

Molded Tube Vulcanizers

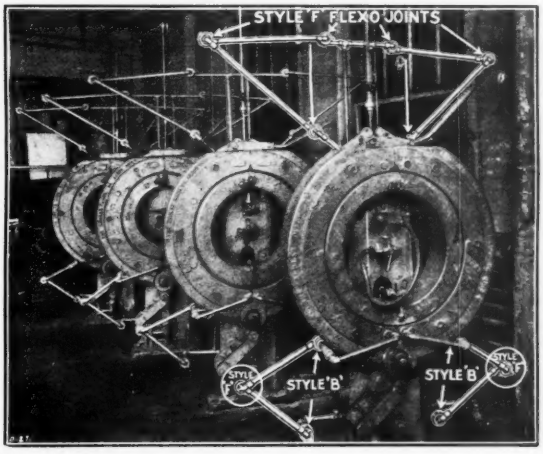
REQUIRE

FLEXO Joints

(Patented)

PRACTICALLY all types of full molded tube vulcanizers have movable parts that must be supplied with steam or air. These swinging connections can best be made by using FLEXO JOINTS. These joints are easy to install, maintain the alignment of the piping, allow the machine to operate freely and at full speed and give a full pipe area at all times whether the vulcanizer is open or closed.

Most rubber shops are using Flexo Joints. It will pay you to use them too.



The above photo illustrates a battery of full molded tube machines manufactured by The Kuhlke Machine Plant, National Rubber Machinery Co., Akron. These vulcanizers are fully equipped with FLEXO JOINTS.

FLEXO SUPPLY CO.

4454 Manchester Ave. St. Louis, Mo.

Riley Engineering & Sup. Co. Toronto, Montreal
Gaston E. Marbaix, Ltd., Adelaide House, London

SEE OUR CATALOGUE IN SWEETS

FLEXO Joints

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Manufacturers
Royal Archer Lines
Piano and Organ Cloths
Rubber Tubings
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Adolph Hirsch & Co., Inc.
Importers and dealers in
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OF ALL DESCRIPTIONS
Brazil Manicoba, and Sheet Rubber, Crude and Washed, Our Specialty.
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Sole Producers of Pure **ASBESTINE** Specially Prepared for Use in Rubber
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A LEADER FOR MORE THAN FORTY YEARS
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A trade journal for the Rubber, Gutta-Percha, Asbestos, and Celluloid Industries and Their Allied Trades.
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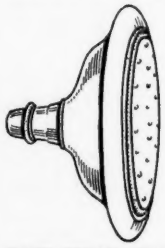

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Ice Bag Caps
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SPRAY CONNECTION

Sheet Metal Specialties and Fittings for Rubber Goods of Every Description.

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Also—Superfine Ventilated Commercial Flour Sulphur 99½% Pure 95% passes through a 200 mesh sieve.

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Established 1840 80 Maiden Lane, New York, N. Y.

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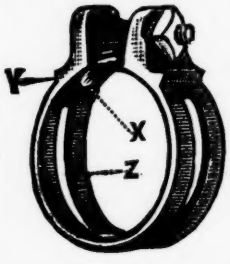


in all the desirable elements of Hose Service when you buy "YERDON'S" CAST BRASS HOSE BANDS.

Made of a Special, RUST-PROOF, composition metal, exceptionally strong and durable, they hold the hose firmly with a double, all-around "Grip" assuring a permanently tight connection. They can be used repeatedly and will be right on the job doing Efficient work long after others are scrapped and forgotten.

ALL sizes for hose ¾" O. D. up to the largest Suction Hose. Most satisfactory on automobile hose connections. Made in Fort Plain, U. S. A. Used everywhere. Unequalled by any.

We solicit your stock orders. If you don't know them write for samples. Both Home and Foreign trade supplied.

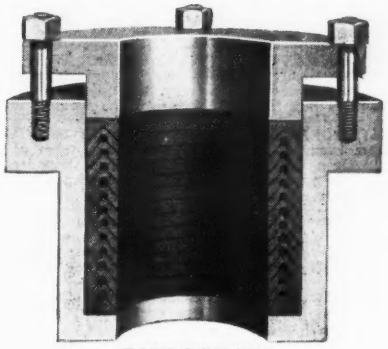
WILLIAM YERDON, Dept. C, Fort Plain, N. Y.

VARNISHES
FOR
RUBBER COMPOUNDS

We Offer Our Technical Service Department to Solve Your Problems

THE MONROE SANDER CORPORATION
Allied with the National Varnish Co.
47-02 Fifth Street LONG ISLAND CITY, N .Y.

MECHANICAL PACKING FOR THE RUBBER INDUSTRY



GARLOCK-430
Patent Applied For

GARLOCK-430 Chevron Packing is primarily designed to pack rams and plungers of heavy duty hydraulic presses, accumulators and pumps as used in the rubber industry.

Chevron Packing is only one of the features of Garlock Packing Service. If you have any packing troubles write us and we will have a Garlock Service Man call. He can solve them to your complete satisfaction.

THE GARLOCK PACKING COMPANY
Manufacturers of Mechanical Packings
PALMYRA, NEW YORK

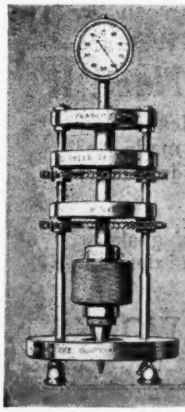
R. S. HARDY CO.

Crude Rubber and Balata

Member of the Rubber Exchange of New York, Inc.

Orders Executed on Commission on the Exchange

Tel. Bowling Green {5743 5744 78-80 Broad St., New York, N.Y.



PLASTOMETER

An exclusive Puseyjones product—the accepted standard for measuring the density and hardness of mechanical rubber.

ask us
THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-making Machinery
[News-print, Book Paper, Kraft Board]
Wilmington, Delaware, U.S.A.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

RUBBER CHEMIST, CHEMICAL ENGINEER, WITH LABORATORY and production experience in tires, tubes, and mechanicals. A dependable practical man. Desires development or compounding work with a reliable company. Address Box No. 9591, care of INDIA RUBBER WORLD.

SUPERINTENDENT: 40 YEARS OF AGE; 20 YEARS' EXPERIence at rubber business. Can produce tires and tubes of first quality at lowest cost. Open for engagement with some organization that needs the services of a man with real practical experience. Address Box No. 9592, care of INDIA RUBBER WORLD.

SALESMAN WITH BROAD TECHNICAL, COMPOUNDING, AND factory experience, who has a large acquaintance with rubber manufacturers, seeks position with reliable concern selling chemicals, colors, or reclaimed rubber to the rubber industry. Address Box No. 9596, care of INDIA RUBBER WORLD.

AMERICAN, FORMER CHIEF CHEMIST LARGE CANADIAN tire plant, with eleven years' experience, nine years with two large firms in Akron, wishes to communicate with rubber firm having opening in executive personnel. Thoroughly conversant with most modern developments of straight-line methods of tire and tube production. Address Box No. 9598, care of INDIA RUBBER WORLD.

MECHANICAL SUPERINTENDENT, FORTY, WITH TEN YEARS' heel, sole, and mechanical rubber goods equipment experience. At present employed. Address Box No. 9600, care of INDIA RUBBER WORLD.

CHEMIST: EXPERIENCED IN SUPERVISION OF COMPOUNDING and development of tires, mechanicals, druggists' sundries, hose, belting, etc., open for responsible connection in the East. Address Box No. 9601, care of INDIA RUBBER WORLD.

FACTORY MANAGER AND CHEMIST WITH OVER FIFTEEN years' experience in various branches of the rubber industry wishes to connect with some organization where his technical and factory training will both be of value. Address Box No. 9606, care of INDIA RUBBER WORLD.

AMERICAN OF LONG EXPERIENCE AND ACCLIMATED IN THE tropics desires executive position. Successful in handling Indians, Blacks, and other native labor; skilled in camp sanitation, difficult transportation problems, and general management. Will accept assignment to investigate new regions, making survey, photographs, and comprehensive business report, with view to permanent position. Former federal investigator, highest references. Address Box No. 9608, care of INDIA RUBBER WORLD.

POSITION WANTED AS MILL AND CALENDER ROOM FOREman in either tires, mechanical, or sundries, or might consider good position as calender operator. Address Box No. 9609, care of INDIA RUBBER WORLD.

CALENDER AND MILLING SUPERINTENDENT, NOW EMployed, desires change. Broad practical experience. Would like to connect with aggressive, reliable company where executive ability can be utilized. Salary to start, secondary consideration. Unqualified references as to ability and character from present and past employers. Address Box No. 9610, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

FIRMLY ESTABLISHED MANUFACTURING COMPANY IN MIDwestern city offers splendid opportunity to young man not over thirty-five years of age to make a good place for himself in its factory. Success in the job will depend largely upon hard work, ability to manage, openmindedness, searching ability, and enthusiasm. Address Box No. 9590, care of INDIA RUBBER WORLD.

DEVELOPMENT ENGINEER: OUR DEVELOPMENT DEPARTment offers a good opportunity to a mechanical engineering graduate for work on tires and tubes. Applicant must be of an inventive turn of mind, well grounded in mathematics, have a natural desire for investigation and research, and be capable of following an assignment to completion. Experience with a rubber company desirable but not altogether essential. State age, education, experience, and salary desired. Address Box No. 9597, care of INDIA RUBBER WORLD.

SALES MANAGER WANTED: MECHANICAL RUBBER LINE. Must have at least ten years' experience. Give references first letter, salary desired, as well as present earnings. Address Box No. 9599, care of INDIA RUBBER WORLD.

FOREMAN, PRESS DEPARTMENT, WANTED BY NEW ENGLAND rubber factory. Must be experienced on molded water bottles and fountain syringes. State fully age, experience, qualifications, and salary. Address Box No. 9602, care of INDIA RUBBER WORLD.

PRODUCTION MANAGER WANTED BY EASTERN CONCERN. Must have technical knowledge and practical experience in compounding and all factory operations pertaining to the manufacture of molded water bottles and fountain syringes. Must have executive ability and know modern production methods. Reply stating qualifications, experience, salary desired. All answers held in strict confidence. Address Box No. 9603, care of INDIA RUBBER WORLD.

MAN WANTED: EXPERIENCED IN SPONGE RUBBER, BY small rubber plant in Midwest. To right party a working interest will be given. In answering give experience, age, salary expected, and when available. Also full information about yourself, which will be held in strict confidence. This is a real opportunity. Address Box No. 9605, care of INDIA RUBBER WORLD.

WANTED: EXPERIENCED JOBBING TUBE SALESMAN, ONE with established trade and well known by the jobbing trade in general. State age, experience, and submit references. Address Box No. 9611, care of INDIA RUBBER WORLD.

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Belting, Hose, Packings, Mechanical Rubber Goods, Quaker Tires
QUAKER CITY RUBBER COMPANY
Main offices and factories: Wissinoming, Philadelphia
Branches: New York, Chicago, Pittsburgh, San Francisco

TECHNOLOGIST
Testing, formulas, costs, experimental work on all classes of rubber products. Litigation.
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ESTABLISHED 1888

Mechanical Rubberware When You Need It
a complete line of mechanicals, excluding hose and belting, made to specifications and shipped promptly
sales to jobbers only
bumpers, slabs, sheet, strips, gaskets —in any quantities needed and desired qualities
ELKHART RUBBER WORKS
ELKHART, INDIANA

CONSULTING RUBBER TECHNOLOGIST
PRACTICAL
Twenty years' factory experience with the largest and most successful companies in the country
PHYSICAL AND CHEMICAL TESTING
Special facilities for abrasion and quick age tests
EXPERT ADVICE TO CORRECT FACTORY TROUBLE
NEW PROCESSES & FORMULAS DEVELOPED
R. R. OLIN LABORATORIES
P. O. BOX 372, AKRON, OHIO
Telephones: Barberton 828. Portage 5895-W

(*Advertisements continued on page* 134)

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TIRE FABRICS OF QUALITY

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The Mark of Fine Rubber Goods

Druggists' Sundries	Play Balls
Adhesive Plaster	Combs
Sporting Goods	Bath Caps
Surgeons' Gloves	Tubing
Industrial Gloves	Nipples
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Makers of Fine Rubber Goods since 1877
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STANDARD
SINCE 1903
RUBBER SUBSTITUTES

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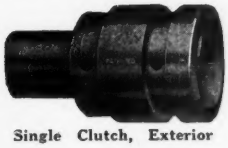
THE JOHNSON FRICTION CLUTCH

As Used in the

RUBBER INDUSTRY



Single Clutch, Exterior

The Clutch That Lasts 15 to 20 Years on

RUBBER MACHINERY

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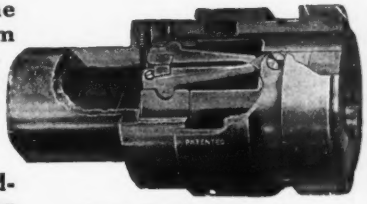
JOHNSON

Thruout the World from Shop to Shop You Will Find JOHNSON'S Use Steadily Growing



Single Clutch, Sectioned

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THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

UNITED

QUALITY
ENGINEERING SERVICE
DURABILITY
STAMINA
EFFICIENCY
DEPENDABILITY

The Most Diversified Stock of Rubber Equipment

UNITED RUBBER MACHINERY EXCHANGE

317-323 FRELINGHUYSEN AVENUE
NEWARK, NEW JERSEY
Cable Address—URME

Classified Advertisements

CONTINUED

SITUATIONS OPEN—Con.

WANTED: EXPERIENCED TIRE SALESMEN HAVING ESTABlished jobbing trade. Our line consists of standard, medium, and low-priced casings and tubes. None but real producers need reply. State age, experience, territory familiar with, and references. Address Box No. 9612, care of INDIA RUBBER WORLD.

A RECLAIMING COMPANY DESIRES TO SECURE the services of a first-class cost accountant who is thoroughly familiar with all elements of factory costs, also departmental and stores control. Address, stating experience, giving references, and salary expected, Box No. 9615, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

WANTED: MANUFACTURING PLANT. A CORPORATION DEsires to purchase a manufacturing plant that is now manufacturing tires or molded mechanical goods. Give full particulars in first letter. Address Box No. 9589, care of INDIA RUBBER WORLD.

Advertiser is desirous of obtaining particulars of manufacture of rubber solution used in making of rubber-set brushes. Reply Box 'U.X.' c/o Street's, 6 Gracechurch Street, London, England.

EUROPEAN (INCLUDING BRITISH) REPRESENTATION REquired: Manufacturers having surplus production available of American gas carbon black, zinc oxide, sulphur, clay, asphaltum, mica, accelerators, fillers, and tougheners for the rubber industry, can interview in America from September 8, on, manager of British chemical concern with view to utilizing important European organization. Highest credentials, branch offices and sub-agencies in chief British cities and six Continental branches. Original company established 1704. Reply where and when can interview. Address Box No. 9593, care of INDIA RUBBER WORLD.

RUBBER WORKING MACHINERY

We offer to the trade today by far the largest stock of guaranteed rebuilt RUBBER WORKING MACHINERY and EQUIPMENT. We also take pleasure in announcing the opening of a warehouse, to supply our Western and California trade, located at

Alameda Street, COMPTON (Suburb Los Angeles) CALIF.

We list below partial list of our offerings.

MILLS
22"x72" Farrel Mill Units
20"x22"x60" Farrel, Vaughn, Thropp and Birmingham units in units of one, two, three and four Mills
New 60" Farrel and Vaughn Mill Units
18"x50" and 54" Thropp, Birmingham and Vaughn Mills
24", 30", 36", 42" and 45" Farrel, Birmingham, Allen and Adamson Mills
6"x12" Experimental Mills
No. 3 Banbury Mixers

CALENDERS
24"x66" Birmingham, Allen, W-S-M and Vaughn Calender Units
22"x60" Farrel, Vaughn and Birmingham Calenders
18"x54" Farrel, Birmingham and Thropp Calenders
32"x48" Bridge Calenders
16", 40" and 48" Farrel and Birmingham Calenders
All-size two-roll Calenders

TUBERS
Nos. 1, 3 and 4 Royle Perfected
2", 4" and 8" Allen and Housatonic
2" and 4" Adamson
6" and 8" Adamson, Clark, Akron Mold Tubers and Strainers

HYDRAULIC PRESSES
12', 16' and 18' Birmingham and Thropp Belt Presses
30"x60" Farrel Presses
48"x48" Farrel Press
42"x42" Southwark, Farrel Presses
24", 30" and 36" Farrel, Thropp and Southwark Presses
12", 15" and 18" Watson-Stillman, and Birmingham Presses
Gooseneck, Toggle and Hand Presses

HYDRAULIC VULCANIZERS
10'x60"—20" ram Southwark
12'x48"—16" ram Southwark
8'x48"—14" ram Adamson

WASHERS—CRACKERS—REFINERS
22"x30" Thropp extra heavy duty Cracker
17"x19"x28" Farrel heavy duty Cracker
16"x36" Vaughn Washer Units
24" and 30" Farrel and Birmingham Crackers
16"x20"x40" Adamson Refiners
14"x18"x30" Birmingham Refiner
12"x16"x24" Vaughn Refiner
12"x18"x20" Birmingham Dust Grinder

NOTE
We are prepared to furnish complete plants from stock, and can arrange equipment in any units with proper Drives, Motor and Safety Equipment to comply with State Laws.

NOTE
We can erect on foundation at any location machinery sold. We actually own and have on the floors of our warehouses, as well as at the various plants we are now dismantling, all of our offerings which are in rebuilt and guaranteed working condition.

"When in Akron Visit Our Akron Warehouse"

L. ALBERT & SON

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Adams, Arch and Union Sts., Akron, Ohio
Great Britain Representative
FRANCIS PAISLEY
76 Maryon Road, London, S. E. 7, England

(*Advertisements continued on page* 136)

NATIONAL

Para-Nitrosodimethylaniline
Triphenylguanidine
Thiocarbanilide
Aniline Oil

The uniformity, purity, and strength of these accelerators meet the exacting demands of the rubber trade.

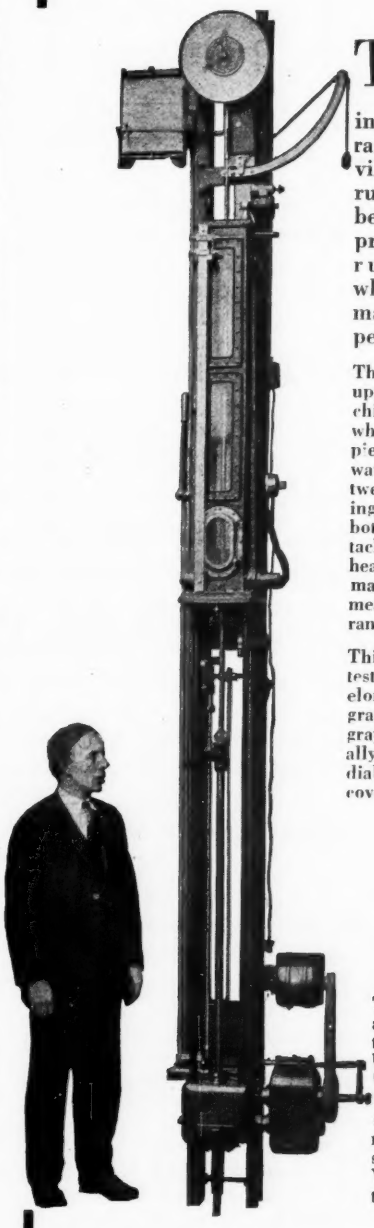
Test samples for their adaptability to your purpose.

Intermediates Division

National Aniline & Chemical Co., Inc.
40 Rector Street New York, N. Y.

NATIONAL N QUALITY

Stress-strain tests at different temperatures



THE latest origination of the Scott Engineering Staff, in collaboration with Dr. Somerville, offers to the rubber trade, or rubber users, a fully proven stress-strain rubber tester, on which tests may be made at varying temperatures.

The picture shows, at the upper part of the machine, a water tank in which the rubber test piece can be stretched in water at any degree between boiling and freezing. The tank carries both a refrigerating attachment and electrical heating units. The water may be circulated by means of a stirring arrangement.

This tester will make tests requiring extra elongation, record them graphically on the autographic recorder or visually on the graduated dial. Machine is fully covered by patents.

A SCOTT TESTER

This machine comes at a very propitious time when effects of heat and cold on rubber life and virility are under study. It is obvious that it cannot be adequately described in this space. Write for further details.

HENRY L. SCOTT CO.
PROVIDENCE, R. I.

MACHINERY

From Tucker Rubber Corporation, Buffalo, N. Y., Bankrupt. All up-to-date modern machinery in excellent operative condition, can be inspected at my warehouse in Buffalo.

1—Textile Finishing Machinery Co., 6 roll duck drying machine 66" x 26" with six copper rolls, winder and countershaft. Price $650.00.

1—Vulcanizer 36" diameter, 5 ft. long, complete with automatic controller, pressure and temperature gauges, steam traps and fittings. Price $200.00.

LARGE MORSE SILENT LINK CHAIN DRIVES

1—100 H.P. with about 45 ft. 6" main steel line shafting with friction clutch and 5 ft. jack shaft with about 20 ft. of 15" steel link chain belting, pinion gears, friction shaft and hangers. Price $500.00.

1—300 H.P. with 40 ft. of 6" main steel line shafting with 6 ft. 6" motor jack shaft with two 16" x 16 ft. steel link chain belts with pinion gears, friction shaft, clutch and hangers. Price $1,000.00.

1—New Morse link chain belt 23 ft. long 15" wide.

2—Air hoists 8" x 36" cylinders. Price $50.00 each.

JACOB ULLMAN, 48-82 Oneida Street
BUFFALO, N. Y.

For Sale or Lease

Complete Rubber Plant located at East Palestine, Ohio. We will equip this plant for any type of rubber goods factory—price attractive, address:

L. ALBERT & SON
TRENTON, N. J.

Classified Advertisements

CONTINUED

BUSINESS OPPORTUNITIES—Con.

FOR SALE: RUBBER FACTORY LOCATED IN NEW JERSEY about thirty miles from New York City. The plant is equipped for the manufacture of mechanical and molded rubber goods and all machinery equipment is in A-1 condition and has been running right up to the present time. Full information upon request. Address Box No. 9614, care of INDIA RUBBER WORLD.

SALES REPRESENTATION IN U. S. A. FOR CHEMICALS, PIGments, and earth colors. Firms having long established connection with rubber and cable manufacturers in U. S. A. near seaboard east and west, can interview manager of British chemical concern in New York, Washington, or Akron, in September, regarding sale of pure lamp black, lithopone, whiting, blanc fixe substitute, green chromium oxide, bright turkey reds, genuine vermilion. State agencies held and give references. Address Box No. 9594, care of INDIA RUBBER WORLD.

FOOTWEAR EXECUTIVES WANTED

Substantial, steady income assured, experienced rubber men with cash, services, for organizing, establishing New Profit-sharing Footwear Factory. Proven New Sales Producing Plan. Patented superior products, nation-wide market, live demand, pre-assures success of enterprise. Good positions. Investment secured; doubled first few years; repeated next. Stand rigid investigation. Life-time ground-floor opportunity. Reply fully, amount investment, confidential. Particulars, mail, or interview, Box No. 9613, care of INDIA RUBBER WORLD.

SALES REPRESENTATION IN CANADA FOR CHEMICALS, PIGments, and earth colors. Firms having long established connection with rubber and cable manufacturers in Canada east and west provinces, can interview manager of British chemical concern in Toronto or Montreal, early in October, regarding sale of pure lamp black, lithopone, zinc oxide, whiting, blanc fixe substitute, green chromium oxide, bright turkey reds, genuine vermilion. State agencies held and give references. Address Box No. 9595, care of INDIA RUBBER WORLD.

NEW and USED RUBBER MACHINERY

From the best and most diversified stock in the world with an unsurpassed engineering service we offer Mills, Refiners, Washers, Crackers, Calenders, Tubers, Vulcanizers, Devulcanizers, Presses, Pumps, Accumulators, Electrical Equipment in most any standard size, and miscellaneous items for the rubber and composition manufacturer for immediate shipment.

SPECIAL THIS MONTH FOR DIRECT SHIPMENT

(Save Warehouse Charge)

One unused 3 unit 60" heavy duty mill line complete.

One used 3 unit 60" heavy duty mill line complete.

Two slightly used 2 unit 60" heavy duty mill lines complete.

One unused individual 60" heavy duty mill with reduction and motor.

One slightly used 3 unit 18" x 50" mill line complete.

One No. 3 Banbury mixer, sliding door type, complete with 440 volt motor and all accessories with or without sheeter mill.

Two unused 14" & 18" x 24" Refiners.

One 42" x 42" 3 opening press with 24" ram.

One Allen 24" x 66" 3 roll calender unused complete with motor and drive. Lowest price ever recorded.

One used same. Lowest price in history.

One Birmingham 24" x 66" 3 roll, unused, exceptionally fine, complete with drive and motor.

24"—36"—48"—54"—60"—66"—72" and 100" calenders (in warehouse).

Two unused 60" x 12' Biggs horizontal vulcanizers complete in all detail, cars, tracks, and instruments, one right hand, one left hand.

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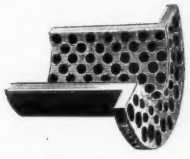

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The first issue appeared in August, 1925. The important position of this journal to the whole Rubber Industry and Science will be seen by the following short summary selection of the articles published at this time:

Dr. E. A. Hauser, F.I.R.I.: Modern problems of rubber planting.

Dr. E. A. Hauser, F.I.R.I.: New x-ray studies on rubber and similar substances.

Dr. E. A. Hauser, F.I.R.I., and Dr. Mark: The structure of stretched rubber.

Dr. Hermann Miedel: The structure of gutta percha and balata.

Prof. Dr. R. Pummerer: The constitution of rubber.

Dr. F. Kirchhof: The oxydation of rubber from scientific and technological view.

Dr. W. Esch: New rules for the building up of rubber mixings.

Dr. A. van Rossem and H. van der Meyden: The physical-mechanical properties of vulcanized rubber at high temperatures.

Dr. E. Neufeld: Investigation results of South African rubber.

W. B. Wiegand, Ph.D.: Rubber mixings.

Dr.-Ing. R. H. Ulrich: Dynamic and static investigations of automobile tires.

Dr. H. Feuchter: On the thermic function of the stretching of raw rubber.

Dr. L. Hock: The planimetrical determination of the breaking energy of rubber and the tensile strength product.

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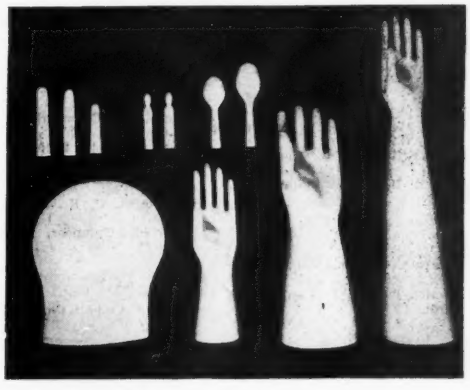

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Taylor, Stiles & Co., Riegelsville, N. J.

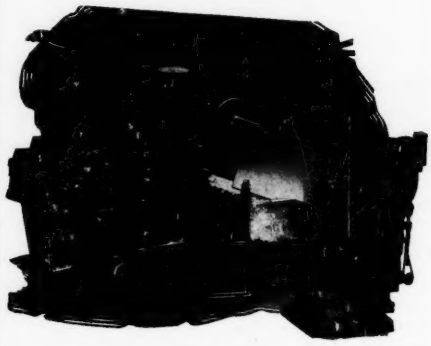
CUTTERS—Sole.
Wellman Co., Medford, Mass.

CUTTERS—Stock.
Black Rock Mfg. Co., The, Bridgeport, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.

CUTTERS—Strip.
Cameron Machine Co., Brooklyn, N. Y.
Farrel - Birmingham Co., Inc., Derby, Conn.
New England Butt Co., Providence, R. I.

CUTTERS—Tape.
Black Rock Mfg. Co., The, Bridgeport, Conn.

For Complete Addresses See Advertisements—Index Page 160



THE **Peerless High Speed Rubber Cutter** will cut all grades of crude rubber into slices of desired thickness with a capacity of 60,000 to 75,000 pounds daily.

Belt or motor driven it is economical as only three horse power is required.

Durable—Speedy—A Labor Saver. We also manufacture

The **Peerless Sample Section Tire Cutter**

"Know Your Costs"

PEERLESS MACHINE CO.

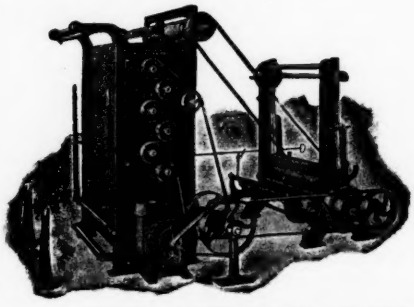
1218 SIXTEENTH STREET RACINE, WISCONSIN

The Best Engineers Specify "WESTERN"

WHEN THEY WANT THE BEST **PUMP VALVES** — BECAUSE EVERY VALVE HAS OUR GUARANTEE BACK OF IT. LET US CONSULT WITH YOU WHAT IS BEST FOR YOUR SERVICE.

WESTERN RUBBER COMPANY

GOSHEN, IND.



HEATH PATENT VERTICAL BRUSHES
With Calender Rolling Machine

CURTIS & MARBLE MACHINE CO.

WORCESTER, MASSACHUSETTS

Brushing Machines, for cleaning goods to be coated; for brushing coated goods in connection with starch; or for cleaning cotton liners of soapstone, talc, etc.; Starching Attachments; Mill Sewing Machines, for stitching the ends of pieces together; Measuring Rolls and Dials; Rolling Machines; Inspecting Machines; Guide Frames; Machine Brushes of all kinds, etc.

The building of textile machinery for handling all varieties of cotton and other fabrics is our specialty.

SUPERFINE SULPHUR

Specially prepared to meet the requirements of rubber manufacturers

Refined Flour Sulphur, 100% Pure. **Commercial Flour Sulphur, 99½% Pure.**

BOTH ARE UNEXCELLED IN FINENESS AND UNIFORMITY

Write for Samples, Prices and Pamphlet. "Real Facts About Sulphur"

SOUTHERN ACID & SULPHUR CO., INC.

Complete Stock of Rubber-makers' Sulphur Carried in Akron

Rialto Building, St. Louis, Mo.

Akron Agent:
C. P. HALL CO.
504-05 Akron Savings & Loan Bldg.
Akron, Ohio

BUYERS' GUIDE

CUTTERS—Tire.
Adamson Machine Co., The, Akron, Ohio.
Peerless Machine Co., The, Racine, Wis.

DENSIMETERS.
Stowe & Woodward Co., Newton Upper Falls, Mass.

DENTAL GUM.
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

DENTAL RUBBER DAM.
Davol Rubber Co., Providence, R. I.
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

DEVULCANIZERS.
Biggs Boiler Works Co., The, Akron, Ohio.

DIE SINKING AND ENGRAVING.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Mechanical Mold & Machine Co., The, Akron, Ohio.

DIEING OUT MACHINES.
Hamlin Machine Co., Lynn, Mass.

DIES.
Akron Equipment Co., The, Akron, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Mechanical Mold & Machine Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.

DIPPED GOODS.
Seamless Rubber Co., The, New Haven, Conn.

DIPPED GOODS FORMS.
Colonial Insulator Co., The, Akron, Ohio.
Seville Porcelain Co., Seville, O.

DOLLS.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

DOUBLING MACHINES.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

DRESS SHIELD MATERIAL.
Archer Rubber Co., Milford, Mass.
Canfield Rubber Co., The, Bridgeport, Conn.
Ome Manufacturing Co., Middletown, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

DRIERS—Cell.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

DRIERS—Cloth.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

DRIVES—Worm.
De Laval Steam Turbine Co., The, Trenton, N. J.

DRUMS—Tire Building.
Bridgwater Machine Co., The, Akron, Ohio.
Utility Manufacturing Co., Cudahy, Wisconsin.

DRYING MACHINES.
American Process Co., New York.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Carrier Engineering Corp., Newark, N. J.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

DUCKS AND DRILLS.
Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.

DUROMETERS.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

ENGINEERING DEVICES.
Yarnall-Waring Co., Philadelphia, Pa.

EXPERIMENTAL WORK.
Maywald, F. J., Carlstadt, N. J.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.

EYELETTING MACHINES.
United Shoe Machinery Corporation, Boston, Mass.

FACTICE.
See Rubber Substitutes.

FINGER COTS.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.
Wilson Rubber Co., Canton, Ohio.

FIXTURES — Hot Water Bottle, Combination.
Brass Goods Mfg. Co., Brooklyn, N. Y.
Davidson Rubber Co., Boston, Mass.

FLOCK—COTTON.
Claremont Waste Mfg. Co., Claremont, N. H.

FLOORING.
American Tile & Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
Puritan Rubber Mfg. Co., Trenton, N. J.
United States Rubber Co., New York.

FOSSIL FLOUR.
Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.

GAGES—Hardness.
Pusey & Jones Corporation, The, Wilmington, Del.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.
Stowe & Woodward Co., Newton Upper Falls, Mass.

GAGES—Magnetic.
Magnetic Gauge Co., The, Akron, Ohio.

GAGES—Pressure.
Bristol Co., The, Waterbury, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Taglianue, C. J., Mfg. Co., Brooklyn, N. Y.
Utility Manufacturing Co., Cudahy, Wis.

GAGES—Thickness.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Randall, Frank E., Waltham, Mass.

GAGES—Tire Pressure.
Schrader's, A., Son, Inc., Brooklyn, N. Y.

GASKETS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield, H. O., Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Garlock Packing Co., The, Palmyra, N. Y.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Yarnall-Waring Co., Philadelphia, Pa.

GASTEX.
General Atlas Chemical Co., New York, N. Y.

GEAR CUTTING.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

GEARS.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Farrel - Birmingham Co., Inc., Buffalo, N. Y.

GEARS—Helical.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Farrel - Birmingham Co., Inc., Buffalo, N. Y.

GEARS—Herringbone.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Farrel - Birmingham Co., Inc., Buffalo, N. Y.

GEARS—Reduction.
De Laval Steam Turbine Co., The, Trenton, N. J.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

GEARS—Worm.
De Laval Steam Turbine Co., The, Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.

GEM DUCK.
Plymouth Rubber Co., Inc., Canton, Mass.

GLOVES—Electricians', Household and Surgeons'.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.
Wilson Rubber Co., Canton, Ohio.

GRAPHITE.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.

GRINDERS—Hard Rubber Dust.
Day, J. H., Co., The, Cincinnati, Ohio.
Farrel - Birmingham Co., Inc., Derby, Conn.

GUAYULE RUBBER.
Continental Rubber Co., New York.
Wilson, Charles T., Co., Inc., New York.

GUTTA PERCHA.
Hankin, Geo., & Co., London, England. (Weeks, Handy & Co., Inc., New York).
Hardy, R. S., Co., New York.
Jacoby, Ernest, Boston, Mass.

GUTTA PERCHA TISSUE.
Bemis Associates, Inc., Watertown, Mass.

HARD RUBBER DUST.
Ferguson, James, & Sons, Ltd., London, England.
Muehlstein, H., & Co., Inc., New York.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.

HARD RUBBER GOODS.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

For Complete Addresses See Advertisements—Index Page 160

AERO BRAND RUBBER CHEMICALS

D. P. G. —After eight years of steadily increasing popularity, still one of the most widely used accelerators.

D. O. T. G. —In its field, second only to D.P.G. in volume of use.

Accelerator No. 49 —A disubstituted guanidine, midway in strength between D.P.G. and D.O.T.G.

Rubber Sulphur —Carefully ground to your specifications, air-floated and bolted through silk.

Our resources, careful technical control of manufacturing, and ample warehouse stocks assure uniformly dependable products and prompt deliveries.

Specify Aero Brand

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535 Fifth Avenue : New York

Dress Shields
Sanitary Goods
Infants' Pants
Rubber Sheeting
Rubber Aprons
Bathing Caps

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FLAT STOCK FOR MANUFACTURERS

THE OMO MANUFACTURING CO.

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Whitall Tatum Company

Manufacturers of

DRUGGISTS' RUBBER SUNDRIES
MOLDED GOODS AND GLASSWARE

FACTORIES:
RUBBER WORKS
KEYPORT, N. J.

GLASS WORKS:
MILLVILLE, N. J.
EAST STROUDSBURG, PA.

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PHILADELPHIA
BOSTON
CHICAGO
SAN FRANCISCO
SYDNEY, N. S. W.
BUENOS AIRES, A. R.

QUALITY GUARANTEED

THE MISSOURI
REFINED BARYTES

BARYTA WHITE
REGISTERED
A DE LORE PRODUCT

Mfd. by C. P. De Lore Co., St. Louis, Mo.

COSTS NO MORE
IS BETTER . . . .
. . . . BECAUSE
IT IS MISSOURI
SOFT TEXTURED
REFINED BARYTES
MADE BETTER
BY WATER-GRINDING
WATER-FLOATING
SILK-BOLTING
PROCESS
PERFECTED IN A
QUARTER CENTURY
OF DEVELOPMENT
AND RESEARCH
BY ITS
MANUFACTURERS.

BUYERS' GUIDE

HARD RUBBER GOODS.—Druggists' and Stationers' Sundries.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Pirelli, Milan, Italy.
Seamless Rubber Co., The, New Haven, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Whitall Tatum Co., New York, N. Y.

HARD RUBBER GOODS—Electrical.
Dominion Rubber Co., Ltd., Montreal, Canada.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

HAT BAGS.
New York Belting & Packing Co., New York.

HEEL NAILS.
United Shoe Machinery Corporation, Boston, Mass.

HEELS.
Panco Rubber Co., Chelsea, Mass.
Panther Rubber Co., Ltd., Sherbrooke, Quebec, Can.
Panther Rubber Mfg. Co., Stoughton, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

HEELS AND SOLES.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Panco Rubber Co., Chelsea, Mass.
Panther Rubber Co., Ltd., Sherbrooke, Quebec, Can.
Panther Rubber Mfg. Co., Stoughton, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

HOISTS.
Utility Manufacturing Co., Cudahy, Wis.

HOISTS—Hydraulic.
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.

HOLLANDS.
McLean, Andrew, Co., New York.

HOSE—Armored.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE—Rubber.
Air Brake, Fire, Garden, Pneumatic, Suction, Submarine, Vacuum, Dredging Sleeves, Radiator.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.

HOSE—Rubber (Continued)
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE—Rubber Lined.
Cotton and Linen.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE FITTINGS—Brass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Western Rubber Co., Goshen, Ind.
Yerdon, William, Fort Plain, New York.

HOSE LININGS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

HOSE MACHINES.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
National-Erie Co., Erie, Pa.
New England Butt Co., Providence, R. I.
Terkelsen Machine Co., Boston, Mass.

HOSE WIRING MACHINES.
Adamson Machine Co., The, Akron, Ohio.

HOSPITAL SHEETINGS.
Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wis.
Dominion Rubber Co., Ltd., Montreal, Canada.
Meade Rubber Co., Stoughton, Mass.
Omo Manufacturing Co., Middletown, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

HYDROCARBONS.
Barber Asphalt Co., Philadelphia, Pa.
Ohmiac Paint & Refining Co., Chicago, Ill.
Wishnick-Tumpeer, Inc., New York, N. Y.

ICE BAG CAPS.
Brass Goods Mfg. Co., Brooklyn, N. Y.

ICE BAGS.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

IMPREGNATING EQUIPMENT—Vacuum Cloth.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

INFUSORIAL EARTH—See Fossil Flour.

INNER TUBES.
Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Murray Rubber Co., Trenton, N. J.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

INSULATED WIRE AND CABLES.
Kerite Insulated Wire & Cable Co., New York.
Pirelli, Milan, Italy.
United States Rubber Co., New York.

INSULATING COMPOUNDS.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Robertson, H. H., Co., Pittsburgh, Pa.

INSULATING MACHINERY.
Adamson Machine Co., The, Akron, O.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.

IRON OXIDE—See Red Oxide.

JAR RING CUTTING MACHINES.
Black Rock Mfg. Co., The, Bridgeport, Conn.

JAR RINGS.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

JOINTS—Pipe.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
Utility Manufacturing Co., Cudahy, Wis.

JOINTS—Swing.
Barco Manufacturing Co., Chicago, Ill.
Bridgwater Machine Co., The, Akron, Ohio.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
National-Erie Co., Erie, Pa.

KETTLES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

LABORATORY EQUIPMENT.
Biggs Boiler Works Co., The, Akron, Ohio.
Bristol Co., The, Waterbury, Conn.
Day, J. H., Co., The, Cincinnati, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Emerson Apparatus Co., Melrose, Mass.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

LAMPBLACK.
Binney & Smith Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LATEX—Rubber.
Hankin, Geo., & Co., London, England. (Weeks, Handy & Co., Inc., New York).
Hardy, R. S., Co., New York.
Jacoby, Ernest, Boston, Mass.
United States Rubber Co., New York.

LATHES—Hard Rubber.
Adamson Machine Co., The, Akron, Ohio.

LATHES—Jar Ring.
Adamson Machine Co., The, Akron, Ohio.
Thropp, William R., Son's Co., Trenton, N. J.

LEAD—Oleate.
Harshaw Chemical Co., The, Cleveland, Ohio.
Stamford Rubber Supply Co., Stamford, Conn.
Wishnick-Tumpeer, Inc., New York.

For Complete Addresses See Advertisements—Index Page 160

Genasco
Reg. U. S. Pat. Off.
HYDROCARBON

In world-wide use!

One of the things that has made Genasco Hydrocarbon so universally used is its uniform quality—proved by aging tests.

It is a hard, stable compound—produced under the strict supervision of an experienced, modern laboratory — and shipped to all parts of the world in metal drums.

Stocks carried at Maurer, N. J., and Madison, Ill.

THE BARBER ASPHALT COMPANY

New York PHILADELPHIA Chicago
Pittsburgh St. Louis Kansas City San Francisco

Miners of Trinidad and Bermudez Native-Lake Asphalts and Gilsonite

Manufacturers of a complete line of Asphalt Shingles and Roofings

Cable Address—BASPACO, Philadelphia

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AN INVESTMENT
WHEN you put your money into KERITE you make an investment in service. You do more than buy conductors, insulation and protection. You obtain the best possible combination of the most desirable qualities in permanent form. KERITE remains long after the price is forgotten.
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NEW YORK CHICAGO SAN FRANCISCO

DRIERS AND WATER SEPARATORS

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RECLAIMED RUBBER

Can Name Attractive Prices on Castings, Forgings, Plate Work and Special Machinery

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MOLDS REMACO CORES

Write or Wire

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MASSILLON, OHIO

Panco Rubber Co.
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MANUFACTURERS OF THE WORLD'S FAMOUS PANCO SOLES AND HEELS

Panther Rubber Mfg. Co.
STOUGHTON, MASS.
PANTHER AND TIGER TREAD SOLES AND HEELS

Puritan Rubber Mfg. Co.
Foot of Perrine Ave.
TRENTON, N. J.
RUBBER MATS, MATTING AND STAIR TREADS
RUBBER CEMENTS FOR ALL PURPOSES

American Tile and Rubber Co.
Perrine Ave.,
TRENTON, N. J.
MANUFACTURERS OF "AMTICO" MARBELIZED RUBBER TILE AND FLOORINGS

BUYERS' GUIDE

LEAD—Stripping Machines.
Robertson, John, Co., Inc., Brooklyn, N. Y.

LEAD—Sublimed.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., The, New York, N. Y.
Wishnick-Tumpeer, Inc., New York.

LIME.
Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LINERS—Processed.
Cleveland Liner & Mfg. Co., The, Cleveland, Ohio.

LITHARGE.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York.

LITHOPONE.
Harshaw Chemical Co., The, Cleveland, Ohio.
New Jersey Zinc Sales Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LOOMS—Hose.
Royle, John, & Sons, Paterson, N. J.

MACHINERY—Transmission Power.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.

MAGNESIA—Calcined.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MAGNESIUM CARBONATE AND OXIDE.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York, N. Y.

MANDRELS—Circular.
Lowe, Clyde E., Co., The, Cleveland, Ohio.

MANDRELS—Sherardized.
New Haven Sherardizing Co., Hartford, Conn.

MANDRELS—Tube Splicing.
National-Erie Co., Erie, Pa.

MASTICATORS.
Day, J. H., Company, The, Cincinnati, Ohio.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

MATTING—Mats and Stair Treads.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Garlock Packing Co., The, Palmyra, N. Y.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Puritan Rubber Mfg. Co., Trenton, N. J.
Quaker City Rubber Co., Philadelphia, Pa.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

MICA.
Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MILLS.
Adamson Machine Co., The, Akron, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Thropp, William R., Son's Co., Trenton, N. J.

MINERAL RUBBER.
Barber Asphalt Co., Philadelphia, Pa.
Harshaw Chemical Co., The, Cleveland, Ohio.
Ohmlac Paint & Refining Co., Chicago, Ill.
Robertson, H. H., Co., Pittsburgh, Pa.
Vanderbilt, R. T., Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MIXERS—Automatic.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

MIXERS—Cement, Plastic.
Day, J. H., Co., The, Cincinnati, Ohio.
Wilcox Machine Company, The, Ravenna, Ohio.

MIXERS—Internal.
Farrel - Birmingham Co., Inc., Derby, Conn.

MOLDS.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Bridgwater Machine Co., The, Akron, Ohio.
Brockton Tool Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
India Machine & Rubber Mold Co., The, Akron, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Mechanical Mold & Machine Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.
Reynolds Machine Co., The, Massillon, Ohio.
Southwark Foundry & Machine Co., Philadelphia, Pa.

MOLDS—Bead.
Akron Standard Mold Co., Akron, Ohio.
Bridgwater Machine Co., The, Akron, Ohio.
India Machine & Rubber Mold Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.
Utility Manufacturing Co., Cudahy, Wisconsin.

MOLDS—Druggists' Sundries.
Hoggson & Pettis Mfg. Co. The, New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.

MOLDS—Engraving Tire.
Bridgwater Machine Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.
Reynolds Machine Co., The, Massillon, Ohio.
Utility Manufacturing Co., Cudahy, Wis.

MOLDS—Heels and Soles.
Brockton Tool Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
Wade, Levi C., Lynn, Mass.

MOLDS—Inner Tube.
Akron Equipment Co., Akron, Ohio.

MOLDS—Mechanical Rubber Goods.
Adamson Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
Wade, Levi C., Lynn, Mass.

MOLDS AND CORES—Tires.
Adamson Machine Co., The Akron, Ohio.
Akron Equipment Co., Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Bridgwater Machine Co., The, Akron, Ohio.
Franz Foundry & Machine Co., Akron, Ohio.
India Machine & Rubber Mold Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.
Reynolds Machine Co., The, Massillon, Ohio.

NAPHTHAS.
Anderson-Prichard Oil Corporation, Akron, Ohio.

NIPPLES—Rubber.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

OILS—Aniline.
National Aniline & Chemical Co., New York, N. Y.

OILS—Palm, etc.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Harshaw Chemical Co., The, Cleveland, Ohio.
Wishnick-Tumpeer, Inc., New York.

OIL—Poppy Seed.
McNulty, Joseph A., New York, N. Y.

OILS—Tar, Pine, Creosote, Rosin, Turpentine.
Harshaw Chemical Co., The, Cleveland, Ohio.
West, H. T., Co., Boston, Mass.
Wishnick-Tumpeer, Inc., New York.

OIL WELL SUPPLIES.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

OSNABURGS.
Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.

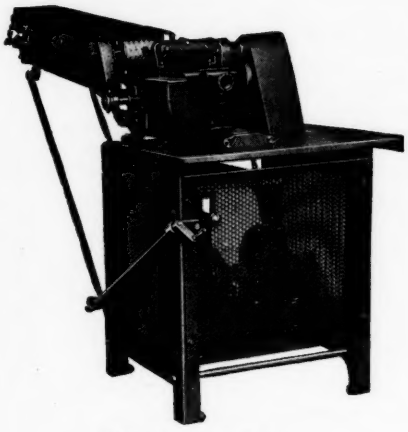
OVENS—Conditioning.
Emerson Apparatus Co., Melrose, Mass.

OXIDE—Maroon.
McNulty, Joseph A., New York, N. Y.

PACKING—Asbestos.
Garlock Packing Co., The, Palmyra, N. Y.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

For Complete Addresses See Advertisements—Index Page 160

USMC Cementing Equipment



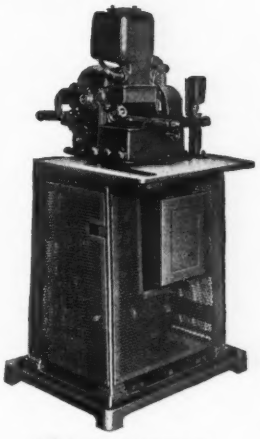
Rotary Cementing Machine
Model RB

THE ROTARY CEMENTING MACHINE —MODEL RB, for cementing insoles, is motor-driven, floor type, with a capacity of 15,000 to 20,000 pairs of insoles daily.

THE USMC DOUBLE CEMENTING MACHINE —MODEL B, is especially designed for cementing both sides of rag fillers, juniors, etc. A floor machine, motor-driven, with a capacity of 12,000 to 15,000 pairs daily.

¶ The installation of these machines will enable rubber shoe manufacturers to handle efficiently their major cementing operations with appreciable savings in labor, cement, and floor space.

Machines may be used as separate units, or in conjunction with a conveyor system



USMC Double Cementing
Machine—Model B

UNITED SHOE MACHINERY CORPORATION

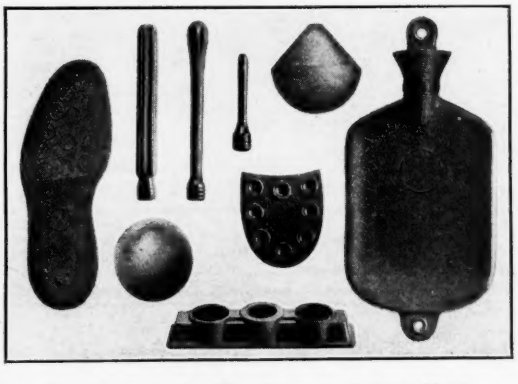
BOSTON, MASSACHUSETTS

Auburn, Maine.....87 Main	Johnson City, N. Y.....276 Main	New York, N. Y.....37 Warren
Brockton, Mass.....93 Centre	Lynn, Mass.....306 Broad	Philadelphia, Pa.....221 North 13th
Chicago, Ill.....18 South Market	Marlboro, Mass.....11 Florence	Rochester, N. Y.....130 Mill
Cincinnati, Ohio.....407 Gilbert	Milwaukee, Wis.....258 Fourth	St. Louis, Mo.....1423 Olive
Haverhill, Mass.....145 Essex	New Orleans, La.....216 Chartres	San Francisco, Cal.....859 Mission

Manufacturers of

MOLDS

FOR MECHANICAL RUBBER GOODS



Specialists in the Manufacture of Steel Molds

Molds for

Heels	Hard Rubber Pipes	Syringe Bags
Soles	Hot Water Bottles	Battery Jars
Bulbs	Battery Covers	Specialties

ALSO

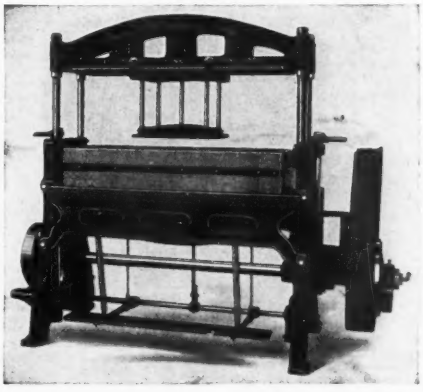
Die Sinkers and Engravers. Medallion Dies a Specialty.

The Mechanical Mold & Machine Co.

Corner Crosier and High Sts., Akron, Ohio

"ECONOMY CLICKER"

OR DIEING OUT PRESS



Built in sizes to meet any condition, and used for all kinds of rubber work by Hood Rubber Co., United States Rubber Co., Firestone Footwear Co., Dominion Rubber Co., Canada. And many others.

Especially adapted to dieing out gaskets, and will show a great increase in your production.

"SAFE, STRONG, SURE AND SPEEDY"

HAMLIN MACHINE COMPANY

Main Office	Branch Office
130 Eastern Avenue	144 Main St.,
LYNN, MASS.	AUBURN, MAINE.

BUYERS' GUIDE

PACKING—Flax.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

PACKING—Rubber.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Garlock Packing Co., The, Palmyra, N. Y.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

PATTERN MAKERS.
Adamson Machine Co., The, Akron, Ohio
Bridgwater Machine Co., The, Akron, Ohio.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.

PETROLATUM.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Vanderbilt, R. T., Co., Inc., New York.

PIGMENTS—Titanium.
Titanium Pigment Co., Inc., New York, N. Y.

PINE TAR.
Harshaw Chemical Co., The, Cleveland, Ohio.
West, H. T., Co., Boston, Mass.
Wishnick-Tumpeer, Inc., New York.

PITCH.
Harshaw Chemical Co., The, Cleveland, Ohio.
West, H. T., Co., Boston, Mass.
Wishnick-Tumpeer, Inc., New York.

PLANTATION MACHINERY.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

PLASTOMETER.
Pusey & Jones Corporation, The, Wilmington, Del.

PLATENS—Steam.
Adamson Machine Co., The, Akron, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Thropp, William R., Son's Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.
Wood, R. D., & Co., Philadelphia, Pa.

PLUMBERS' SUPPLIES.
Acme Rubber Mfg. Co., Trenton, N. J.
Canfield Co., H. O., Bridgeport, Conn.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

PONCHOS.
Archer Rubber Co., Milford, Mass.
Chicago Rubber Clothing Co., Racine, Wisconsin.
Clifton Manufacturing Co., Boston, Mass.
United States Rubber Co., New York.

PRESSES—Bakelite.
Erie Foundry Co., Erie, Pa.
Lake Erie Engineering Corporation, Buffalo, N. Y
Terkelsen Machine Co., Boston, Mass.

PRESSES—Baling.
Lake Erie Engineering Corporation, Buffalo, N. Y.

PRESSES—Bead.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Belt.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PRESSES—Heater.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Franz Foundry & Machine Co., The, Akron, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Hydraulic.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Robertson, John, Co., Inc., Brooklyn, N. Y.
Terkelsen Machine Co., Boston, Mass.

PRESSES—Lead Encasing.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Robertson, John, Co., Inc., Brooklyn, N. Y.

PRESSES—Molding.
Erie Foundry Co., Erie, Pa.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Terkelsen Machine Co., Boston, Mass.

PRESSES—Mechanical Molding.
Terkelsen Machine Co., Boston, Mass.

PRESSES—Packing.
Black Rock Mfg. Co., The, Bridgeport, Conn.
Lake Erie Engineerng Corporation, Buffalo, N. Y.

PRESSES—Tiling.
Erie Foundry Co., Erie, Pa.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Utility Manufacturing Co., Cudahy, Wis.

PRESSES—Tire.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Tire Rimming.
Adamson Machine Co., The, Akron, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Nagle Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PRESSES—Tire Vulcanizing.
Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, O.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Toggle.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Terkelsen Machine Co., Boston, Mass.

PRESSES—Vulcanizing.
Adamson Machine Co., The, Akron, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.
Robertson, John, Co., Inc., Brooklyn, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Terkelsen Machine Co., Boston, Mass.
Thropp, William R., Son's Co., Trenton, N. J.

PRESSES—Vulcanizing (Cont'd).
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.
Wood, R. D., & Co., Philadelphia, Pa.

PUMICE.
Harshaw Chemical Co., The, Cleveland, Ohio.

PUMP RINGS AND SLEEVES.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

PUMPS.
Adamson Machine Co., The, Akron, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Robertson, John, Co., Inc., Brooklyn, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.

PUMPS—Centrifugal.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PUMPS—Vacuum.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

RACKS AND FRAMES.
Day, J. H., Co., The, Cincinnati, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

RECLAIMED RUBBER.
Bloomingdale Rubber Co., New York.
Clapp, E. H., Rubber Co., Boston, Mass.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Nearpara Rubber Co., Trenton, N. J.
New Jersey Rubber Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works Co., The, Oaks, Montgomery County, Pa.
Rubber Recovery Co., The, Akron, Ohio.
Rubber Regenerating Co., Naugatuck, Conn.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.
U. S. Rubber Reclaiming Co., Inc., New York.
Vulcan Recovery Co., Trenton, N. J.
Xylos Rubber Co., Akron, Ohio.

RECLAIMING MACHINERY.
Adamson Machine Co., The, Akron, Ohio.
American Process Co., New York.
Biggs Boiler Works Co., The, Akron, Ohio.
Day, J. H., Co., The, Cincinnati, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.

For Complete Addresses See Advertisements—Index Page 160

DAVIDSON RUBBER COMPANY

BOSTON, MASSACHUSETTS

Specializing in the Manufacture of Highest Quality

Water Bottles, Fountain Syringes and Baby Nipples

QUALITY GUARANTEED

PLYMOUTH RUBBER CO.

INCORPORATED

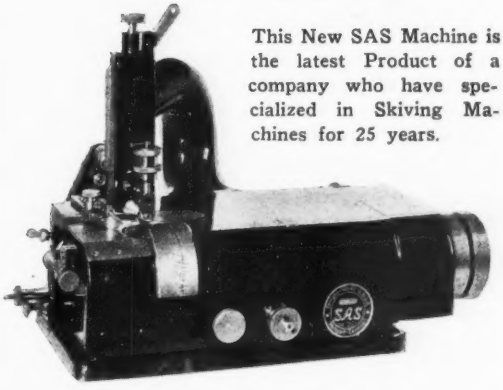
CANTON :-: MASS.

Largest Rubberizers of Cloth in the World

RUBBER HEELS | SHEET RUBBER GOODS
HOSPITAL SHEETINGS | AUTO TOP MATERIALS
ELECTRICAL TAPES | GEM DUCK

PLYMOUTH QUALITY RAINCOAT FABRICS

RUBBER SKIVING SIMPLIFIED



This New SAS Machine is the latest Product of a company who have specialized in Skiving Machines for 25 years.

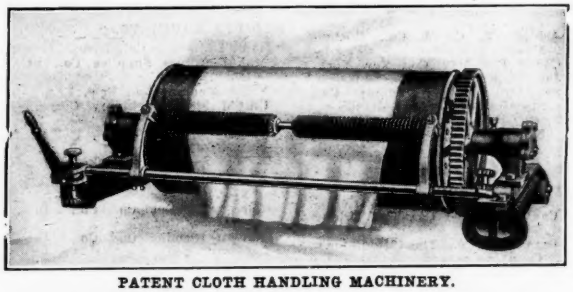
Special fittings for various Rubber Jobs. THE MOST EFFICIENT MACHINE FOR Rubber Goods, Tire Reliners, Boots, Patches, Rubber Boots and Shoes, Rubber Novelties.

Special Knives for Rubber Fit All Old Models.

Details and prices gladly furnished

Manufacturers Supplies Co.

716-32 No. 18th St. St. Louis, Mo.



PATENT CLOTH HANDLING MACHINERY.

STRETCHER AND WRINKLE BRUSHES
also all kinds of machine brushes

THE BRISTLE STRETCHER CO. MANSFIELD MASS.

THE

Wilson Rubber Company

CANTON, OHIO

Largest Manufacturers of Industrial—Electricians—Household and Surgeons

RUBBER GLOVES

FINGER COTS PENROSE TUBING

Highest Quality Products Only.

DOMINION RUBBER COMPANY LIMITED

Formerly CANADIAN CONSOLIDATED RUBBER COMPANY, LIMITED

Executive Offices—MONTREAL, CANADA

DOMINION RUBBER SYSTEM

Canada's largest manufacturers of Rubber Goods, including: Rubber Footwear, Automobile and Bicycle Tires, Mechanical Rubber Goods, Rubber Covered Rolls, Druggists' Rubber Sundries, Moulded Rubber Specialties, Rubber Soles and Heels, Rubber-Sole Canvas Shoes.

Twelve manufacturing plants. Twenty service branches in the leading cities throughout Canada.

BUYERS' GUIDE

RECLAIMING WATER SEPARATORS.

American Process Co., New York.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

RECORDING INSTRUMENTS—Pressure, Temperature.

Bristol Co., The, Waterbury, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.
Taylor Instrument Cos., Rochester, N. Y.

RED OXIDE.

Binney & Smith Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
McNulty, Joseph A., New York.
Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

REFINERS.

Erie Foundry Co., Erie, Pa.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.

REPAIR STOCK.

Dominion Rubber Co., Ltd., Montreal, Canada.
General Tire & Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

RESIN.

Wishnick-Tumpeer, Inc., New York.

RETREADING EQUIPMENT—Tire

Franz Foundry & Machine Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.

RINGS—Bead Setting.

Akron Standard Mold Co., Akron, Ohio.
Bridgwater Machine Co., The, Akron, Ohio.
India Machine & Rubber Mold Co., The, Akron, Ohio.
National-Erie Co., Erie, Pa.

RINGS—Mold Side.

National-Erie Co., Erie, Pa.

ROLLERS AND STITCHERS—Hand.

Hoggson & Pettis Mfg. Co., New Haven, Conn.
Wellman Co., Medford, Mass.

ROLLS—Chilled.

Curtis & Marble Machine Co., Worcester, Mass.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Textile-Finishing Machinery Co., Providence, R. I.

ROLLS—Engraving.

Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

ROLLS—Rubber Covered.

Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

ROLLS—Wringer.

Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
New York Belting & Packing Co., New York.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

ROSIN.

Harshaw Chemical Co., The, Cleveland, Ohio.
West, H. T., Co., Boston, Mass.
Wishnick-Tumpeer, Inc., New York.

ROTTEN STONE.

Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.

RUBBER—Brokers.

Dunbar, F. W., & Co., Inc., New York.
Hardy, Roger S., New York.
Harriss & Vose, New York.
Hentz, H., & Co., New York.
Jacoby, Ernest, Boston, Mass.
Schulman, A., Inc., Akron, Ohio.
Wood VanderPyl Co., Inc., New York, N. Y.

RUBBER—Importers and Exporters.

Chalfin, Joseph, Inc., New York.
Continental Rubber Co., New York.
Hankin, Geo., & Co., London, England. (Weeks, Handy & Co., Inc., New York).
Hirsch, Adolph, & Co., Inc., New York.
Muehlstein, H., & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

RUBBER—Washed and Dried.

Acushnet Process Co., New Bedford, Mass.

RUBBER BANDS.

Davol Rubber Co., Providence, R. I.
Easthampton Rubber Thread Co., Easthampton, Mass.
Murray Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

RUBBER COATED CLOTHS.

Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., The, Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wisconsin.
Clifton Manufacturing Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Meade Rubber Co., Stoughton, Mass.
Mechanical Fabric Co., Providence, R. I.
Pirelli, Milan, Italy.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

RUBBER COVERING MACHINES.

New England Butt Co., Providence, R. I.

RUBBER EXCHANGE—Members.

Dunbar, F. W., & Co., Inc., New York.
Hardy, Roger S., New York.
Harriss & Vose, New York.
Hentz, H., & Co., New York.
Muehlstein, H., & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

RUBBER SUBSTITUTES.

Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Jacoby, Ernest, Boston, Mass.
Stamford Rubber Supply Co., Stamford, Conn.
Tyson Bros., Inc., Woodbridge, N. J.

SANITARY GOODS.

Canfield Rubber Co., The, Bridgeport, Conn.
Omo Mfg. Co., The, Middletown, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.

SCLEROSCOPES.

Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

SCRAP RUBBER.

Birkenstein, S., & Sons, Chicago, Ill.
Chalfin, Joseph, Inc., New York.
Cummings, Wm. H., & Sons, New York.
Muehlstein, H., & Co., Inc., New York.
Norton, M., & Co., Medford, Mass.
Schulman, A., Inc., Akron, Ohio.

SECOND-HAND MACHINERY.

Albert, L., & Son, Trenton, N. J.
Bolling, Stewart, & Company, Cleveland, Ohio.
Norton, M., & Co., Medford, Mass.
Sherman, Geo. W., Akron, Ohio.
United Rubber Machinery Exchange, Newark, N. J.

SEWING MACHINES.

Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Curtis & Marble Machine Co., Worcester, Mass.
Hamlin Machine Co., Lynn, Mass.

SHEET METAL SPECIALTIES.

Brass Goods Mfg. Co., Brooklyn, N. Y.

SHEET PACKING.

Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

SHEETINGS.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.

SHERARDIZING.

New Haven Sherardizing Co., Hartford, Conn.

SHOES—Canvas.

Dominion Rubber Co., Ltd., Montreal, Canada.
United States Rubber Co., New York, N. Y.

SIFTERS—Rotary.

Day, J. H., Co., The, Cincinnati, Ohio.

SILICA.

Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

SINGEING MACHINES.

Butterworth, H. W., & Sons Co., Philadelphia, Pa.

SKIVING MACHINES.

Hamlin Machine Co., Lynn, Mass.
Manufacturers Supplies Co., St. Louis, Mo.
Nagle Machine Co., Erie, Pa.
United Shoe Machinery Corporation, Boston, Mass.

SLITTERS—Belting Duck.

Cameron Machine Co., Brooklyn, N. Y.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

SLITTING AND REWINDING MACHINES.

Cameron Machine Co., Brooklyn, N. Y.

SOAP BARK.

Harshaw Chemical Co., The, Cleveland, Ohio.
Wishnick-Tumpeer, Inc., New York.

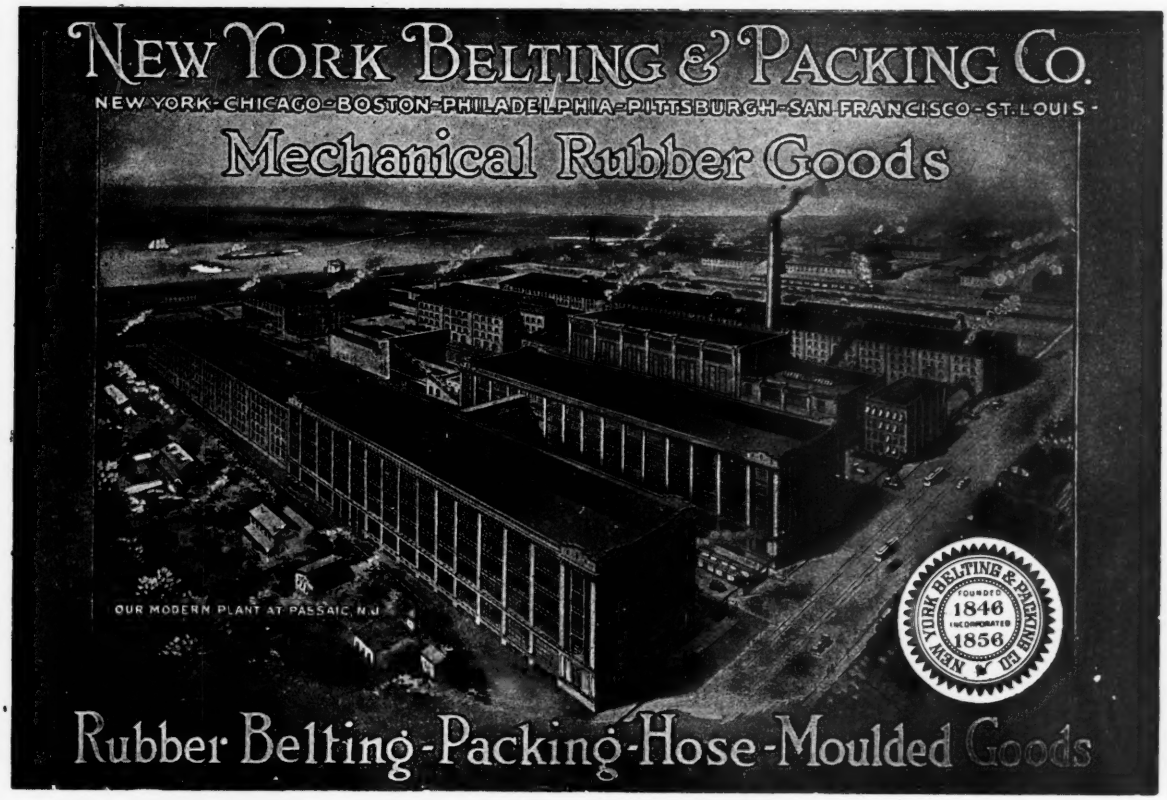
SOAPSTONE.

Binney & Smith Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

SOFTENERS.

Damascus Manufacturing Corporation, Cleveland, Ohio.
Hall, C. P., Co., The, Akron, Ohio.
Montgomery, W. L., & Co., Boston, Mass.
Vanderbilt, R. T., Co., Inc., New York.

For Complete Addresses See Advertisements—Index Page 160


NEW YORK BELTING & PACKING CO.
NEW YORK - CHICAGO - BOSTON - PHILADELPHIA - PITTSBURGH - SAN FRANCISCO - ST. LOUIS -
Mechanical Rubber Goods
OUR MODERN PLANT AT PASSAIC, N.J.
NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856
Rubber Belting - Packing - Hose - Moulded Goods

T. C. ASHLEY & CO.

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RUBBER SUBSTITUTES

BROWN WHITE

Represented by

H. N. RICHARDS TRENTON, N. J.

TRADE MARK

TYSON BROS., INC.

WOODBRIDGE, N. J.

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The best grades of rubber substitutes and chemicals for all branches of the Rubber Trade.

J. A. Kendall
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Akron, O.

Wholesale Supply Co.
1047 No. Wilcox Ave.
Los Angeles, Cal.

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ERNEST JACOBY

CRUDE RUBBER

BOSTON MASS.

Cable Address: Jacobite Boston

BUYERS' GUIDE

SOLE CUTTING MACHINES.
Wellman Company, The, Medford, Mass.

SOLES AND TAPS.
Dominion Rubber Co., Ltd., Montreal, Canada.
Panco Rubber Co., Chelsea, Mass.
Panther Rubber Co., Ltd., Sherbrooke, Quebec, Can.
Panther Rubber Mfg. Co., Stoughton, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York, N. Y.

SOLING—Crêpe.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Hankin, Geo., & Co., London, England. (Weeks, Handy & Co., Inc., New York).
Harriss & Vose, New York.
Jacoby, Ernest, Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.

SOLVENT RECOVERY APPARATUS.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Societe de Recherches et d'Exploitations Petroliferes, Paris (8e), France.

SOLVENTS.
Anderson-Prichard Oil Corporation, Akron, Ohio.

SPECIALTIES—Rubber.
Canfield, H. O., Co., The, Bridgeport, Conn.
Canfield Rubber Co., The, Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wis.
Dominion Rubber Co., Ltd., Montreal, Can.
Essex Rubber Co., Trenton, N. J.
Omo Manufacturing Co., Middletown, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.
Seamless Rubber Co., The, New Haven, Conn.
Whitall Tatum Co., New York, N. Y.

SPLICING COMPOUNDS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

SPREADERS.
Adamson Machine Co., The, Akron, Ohio.
Farrel - Birmingham Co., Inc., Derby, Conn.

SPREADERS (Continued)
New England Butt Co., Providence, R. I.
Textile-Finishing Machinery Co., Providence, R. I.

STAMP GUM.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
United States Rubber Co., New York.

STARCH—Corn.
Wishnick-Tumpeer, Inc., New York.

STEARIC ACID.
Binney & Smith Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.

STITCHERS.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

STOPPERS—Rubber.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
New York Belting & Packing Co., New York.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

STOPPLES—Screw (Water Bottle).
Schrader's, A., Son, Inc., Brooklyn, N. Y.

STRAINING MACHINES.
Erie Foundry Co., Erie, Pa.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.

STRETCHERS—Belting.
Farrel - Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.

SULPHUR.
Battelle & Renwick, New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
St. Louis Sulphur & Chemical Co., St. Louis, Mo.
Southern Acid & Sulphur Co., Inc., St. Louis, Mo.
White, T. & S. C., Co., New York.

SULPHUR (Continued).
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

SULPHUR CHLORIDE.
Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer, Inc., New York.

SYRINGE SHUT OFFS.
Brass Goods Mfg. Co., Brooklyn, N. Y.

SYRINGES—Fountain.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

TABLES—Steel.
Standard Pressed Steel Co., Jenkintown, Pa.

TABLES—Stripping.
Akron Standard Mold Co., Akron, Ohio.
National-Erie Co., Erie, Pa.

TALC.
Binney & Smith Co., New York.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Vanderbilt, R. T., Co., Inc., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

TAPE—Adhesive.
Bemis Associates, Inc., Watertown, Mass.
Seamless Rubber Co., The, New Haven, Conn.

TAPE—Cloth Friction.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.

TAPE—Cloth Friction (Continued)
Clifton Manufacturing Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Home Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

TAPE—Insulating.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

TAPE—Tire.
Adams, H. J., Co., The, Akron, Ohio.

TECHNOLOGISTS—Consulting, Rubber.
Maywald, F. J., Carlstadt, N. J.
Olin, R. R., Laboratories, Akron, Ohio.

TEETHING RINGS.
Rhoades, R. W., Metaline Co., Inc., Long Island City, N. Y.

TENTERING MACHINES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

TESTING MACHINES.
Scott, Henry L., Co., Providence, R. I.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

THERMOMETERS.
Bristol Co., The, Waterbury, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

THREAD—Rubber.
Easthampton Rubber Thread Co., Easthampton, Mass.
Mechanical Fabric Co., Providence, R. I.
United States Rubber Co., New York.

TILING.
American Tile & Rubber Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Plymouth Rubber Co., Inc., Canton, Mass.
Puritan Rubber Mfg. Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

For Complete Addresses See Advertisements—Index Page 160

We Manufacture a Variety of Shades of

RED OXIDE OF IRON

particularly adapted for RUBBER MANUFACTURERS' USE

C. K. WILLIAMS & CO. ANCHOR BRAND DRY COLORS AND FILLERS EASTON, PA. U.S.A.

Extremely strong in coloring power and ground impalpably fine. Also various grades of Talc, Soapstone and Asbestine. Write us for samples and prices.

C. K. WILLIAMS & CO. Easton, Pa.

Pacific Coast Representative, Marshall Dill, 510 Montgomery St., San Francisco, Calif.

PERMANENT *light colors* now possible through TITANOX

Brighter Whites and Clearer Tints... unaffected by chemicals, heat or light ... can be obtained in rubber made with Titanox

A SLIGHT change in your mixing formula . . . the introduction of a whiter, more opaque white pigment, Titanox . . . and your white or colored rubber products gain new sales advantages.

Titanox gives to rubber a brilliant whiteness . . . a tonal value that produces clear, bright tints, especially valuable for thin-sheet stocks. *And it holds these effects!* It will not discolor. It is unusually resistant to sulphur and accelerators. Neither steam vulcanization nor acid cures affect its color.

Titanox is a true composite opaque pigment, consisting of Titanium Oxide precipitated upon and coalesced with Barium Sulphate (blanc fixe). Disperses well. Absolutely stable and inert. For further information, write to our nearest branch.

TITANIUM PIGMENT CO., Inc.

Manufacturers of

TITANOX - TITANIUM CALCIUM PIGMENT - PURE TITANIUM OXIDE

60 John St., New York, N. Y.; Carondelet Station, St. Louis Mo.: P. O. Box "D" Niagara Falls, N. Y.
Pacific Coast Distributors: National Lead Co. of Calif., 235 Montgomery St., San Francisco.
Canadian Distributors: Wilson, Paterson, Gifford, Limited—101 Murray St., Montreal; 275 Campbell Ave., Toronto

THE UNEXCELLED SOFTENER

ARLINGTON MILLS DEGRAS

Degras is indicated as the best softener in the preparation of cheapest rubber mixings because it has the lowest volume cost, is cleanest and most effective.

In such stocks ease of plastication is an important feature from the point of view of mill and calender room cost. The easy dispersion of heavy pigmentation adds to make plastication easy and to reduce material and power costs.

W. L. MONTGOMERY & CO.

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10 HIGH STREET BOSTON, MASS.

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PURE SOFT SULPHUR

Prepared Especially for

Rubber Manufacturers

T. & S. C. WHITE COMPANY

Established 1841

THE NEW YORK LIFE INSURANCE BUILDING

51 Madison Avenue New York, N. Y.

Sulphurettes

AND OTHER COMPOUNDS OF

ANTIMONY

RARE METAL PRODUCTS CO.

BELLEVILLE NEW JERSEY

America's Largest Antimony Manufacturer

BUYERS' GUIDE

TIMERS—Operation.
Day, J. H., Co., The, Cincinnati, Ohio.

TIRE BAND BUILDING MACHINES.
Utility Manufacturing Co., Cudahy, Wis.

TIRE BUILDING MACHINES.
Utility Manufacturing Co., Cudahy, Wis.

TIRE FABRICS.
Adams, H. J., Co., The, Akron, Ohio.
Bibb Mfg. Co., Macon, Ga.
Southern Brighton Mills, Atlanta, Ga.
Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.

TIRE MACHINE DRUMS.
Gammeter, V. F., Co., The, Cadiz, Ohio.

TIRE PRESSES.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Wood, R. D., & Co., Philadelphia, Pa.

TIRE REBUILDING AND REPAIR EQUIPMENT.
Akron Equipment Co., Akron, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Franz Foundry & Machine Co., Akron, Ohio.
National-Erie Co., Erie, Pa.

TIRE WRAPPING MACHINES—Paper.
Terkelsen Machine Co., Boston, Mass.

TIRES—Airplane.
United States Rubber Co., New York, N. Y.

TIRES—Auto.
Dominion Rubber Co., Ltd., Montreal, Canada.
General Tire & Rubber Co., Akron, Ohio.

TIRES—Auto (Continued)
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Murray Rubber Co., Trenton, N. J.
Pirelli, Milan, Italy.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

TIRES—Baby Carriage.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

TIRES—Bicycle.
Dominion Rubber Co., Ltd., Montreal, Canada.
United States Rubber Co., New York, N. Y.

TIRES—Motorcycle.
Dominion Rubber Co., Ltd., Montreal, Canada.
United States Rubber Co., New York, N. Y.

TIRES—(Solid) Truck.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
United States Rubber Co., New York.

TITANIUM OXIDE.
Titanium Pigment Co., Inc., New York, N. Y.

TOYS.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.

TREAD CUTTERS.
Utility Manufacturing Co., Cudahy, Wis.

TREAD-MAKING MACHINES.
Farrel-Birmingham Co., Inc., Derby, Conn.
National-Erie Co., Erie, Pa.

TRIMMERS—Belt.
Bridgwater Machine Co., The, Akron, Ohio.
Morris, T. W., Chicago, Ill.
United Shoe Machinery Corp., Boston, Mass.

TRIMMERS—Sole and Heel.
Morris, T. W., Chicago, Ill.
Utility Manufacturing Co., Cudahy, Wis.

TRIMMERS—Tire Bead.
Bridgwater Machine Co., The, Akron, Ohio.

TRIMMERS—Tire Flap.
Bridgwater Machine Co., The, Akron, Ohio.

TUBE WRAPPING MACHINES.
Akron Standard Mold Co., Akron, Ohio.
National-Erie Co., Erie, Pa.

TUBING.
Acme Rubber Mfg. Co., Trenton, N. J.
Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Garlock Packing Co., The, Palmyra, N. Y.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., The, New Haven, Conn.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York.
Wilson Rubber Co., Canton, Ohio.

TUBING MACHINES.
Adamson Machine Co., Akron, O.
Erie Foundry Co., Erie, Pa.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.

VALVE BALLS.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Quaker City Rubber Co., Philadelphia, Pa.
Western Rubber Co., Goshen, Ind.

VALVES.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES—Air Bag.
Schrader's, A., Son, Inc., Brooklyn, N. Y.

VALVES—Hydraulic.
Dunning & Boschert Press Co., Inc., The, Syracuse, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, PUMP—Rubber.
Garlock Packing Co., The, Palmyra, N. Y.
Home Rubber Co., Trenton, N. J.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.
Western Rubber Co., Goshen, Ind.

VALVES—Rubber.
Canfield, H. O., Co., The, Bridgeport, Conn.
Canfield Rubber Co., The, Bridgeport, Conn.
Garlock Packing Co., The, Palmyra, N. Y.
Linear Packing & Rubber Co., Inc., Philadelphia, Pa.

VALVES—Steam and Pump.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.

VALVES—Two Pressure.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES AND CAPS—Tire.
Schrader's, A., Son, Inc., Brooklyn, N. Y.

For Complete Addresses See Advertisements—Index Page 160

FOR BEAUTY AND QUALITY USE

OXIMONY

THE SUPER RED OXIDE FOR RUBBER

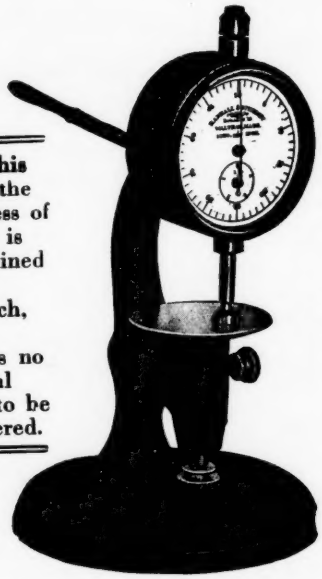
SOLD ONLY BY

E. M. & F. WALDO, Inc.
NEW YORK OFFICE, 11 BROADWAY

TALC—FILLERS—COLORS
MUIRKIRK, MARYLAND
AGENTS AT STRATEGIC POINTS

The Efficiency Rubber Gauge

(The Randall and Stickney Thickness Gauge)



With this Gauge the thickness of rubber is determined within .001 inch, and there is no personal factor to be considered.

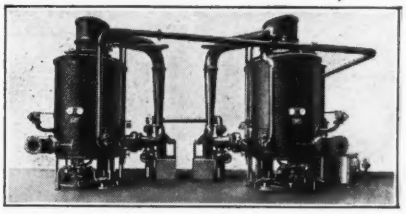
This instrument has been in use by the leading Rubber Manufacturers of this country and Canada for fifteen years.

Operated by a Standard Pressure on a Standard Area

Send for Descriptive Circular and Prices

FRANK E. RANDALL Waltham, Mass.

No Royalty *No Fees*



Recovery of volatile solvent from air by **ACTICARBONE**

Recovery of all solvents

Absorption **Bleaching**

BY THE ACTIVATED CARBON

"ACTICARBONE"

PROCESSES PATENTED FRANCE, ABROAD.

MAXIMUM YIELD ECONOMY SAFETY

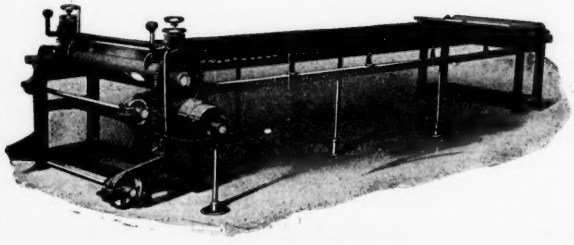
Ste de RECHERCHES et d'EXPLOITATIONS PETROLIFERES

73 Boulevard Haussmann, Paris (8e) France

FACTORY FOR THE MANUFACTURE OF ACTIVE CARBON AT VAUX (AIN) FRANCE

THE EXTREMELY HEAVY CONSTRUCTION OF THESE

RUBBER SPREADING MACHINES



makes them particularly well adapted for applying thin successive coatings of rubber for the manufacture of high grade sheetings, rain coatings, offset blankets, etc.

MACHINES MADE IN WIDTHS FROM 50-in. to 80-in.

NEW ENGLAND BUTT CO.

304 Pearl St. PROVIDENCE, R. I.

Chicago Office: 140 South Dearborn Street, Chicago, Ill.

FLUXRITE

Practical Softeners

YOU CANNOT AFFORD TO BE WITHOUT THEM

Investigation Invited

Damascus Manufacturing Corp.

CLEVELAND, OHIO

New Jersey Territory: H. M. ROYAL, INC., Trenton

BUYERS' GUIDE

VARNISHES—Rubber.
Monroe Sander Corporation, Long Island City, N. Y.

VARNISHING MACHINES.
Farrel - Birmingham Co., Inc., Derby, Conn.

VULCANIZERS.
Adamson Machine Co., Akron, O.
Akron Equipment Co., The, Akron, Ohio.
Biggs Boiler Works Co., Akron, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Lake Erie Engineering Corporation, Buffalo, N. Y.
National-Erie Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Thropp, William R., Son's Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Wood, R. D., & Co., Philadelphia, Pa.

VULCANIZERS—Dry Heat.
Carrier Engineering Corp., Newark, N. J.

VULCANIZERS—Individual Tire.
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Utility Manufacturing Co., Cudahy, Wis.

WASHER SETTING MACHINE FOR HEEL MOLDS.
Utility Manufacturing Co., Cudahy, Wis.

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Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
National-Erie Co., Erie, Pa.
Thropp, William R., Son's Co., Trenton, N. J.

WATER BOTTLES.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., The, New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

WAX.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Harshaw Chemical Co., The, Cleveland, Ohio.
Vanderbilt, R. T., Co., Inc., New York.

WAX—Montan.
Wishnick-Tumpeer, Inc., New York.

WHEELS—Elastic Emery.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
United States Rubber Co., New York.

WHITING.
Harshaw Chemical Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Southwark Manufacturing Co., Camden, N. J.
Taintor Co., The, New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
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Butterworth, H. W., & Sons Co., Philadelphia, Pa.

WIRE—Lead Covered.
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WIRE—Rubber Insulated.
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WIRE WRAPPING MACHINES.
Terkelsen Machine Co., Boston, Mass.

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Whittaker, Clark & Daniels, Inc. New York.
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Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

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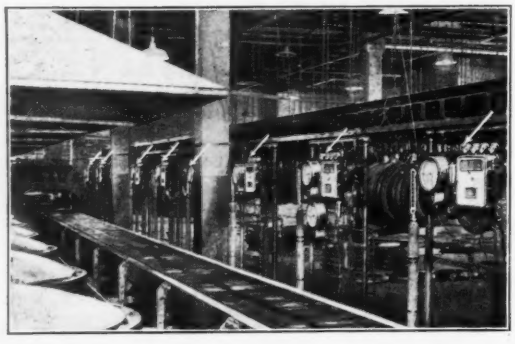

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In Vulcanizing Tires where time-temperature schedules have to be followed exactly, Tycos Thermo-Tyme Regulators do this automatically. They bring the temperature to the required degree, at the right time, as well as remove the condensed steam. Emergency shut-off is also included.

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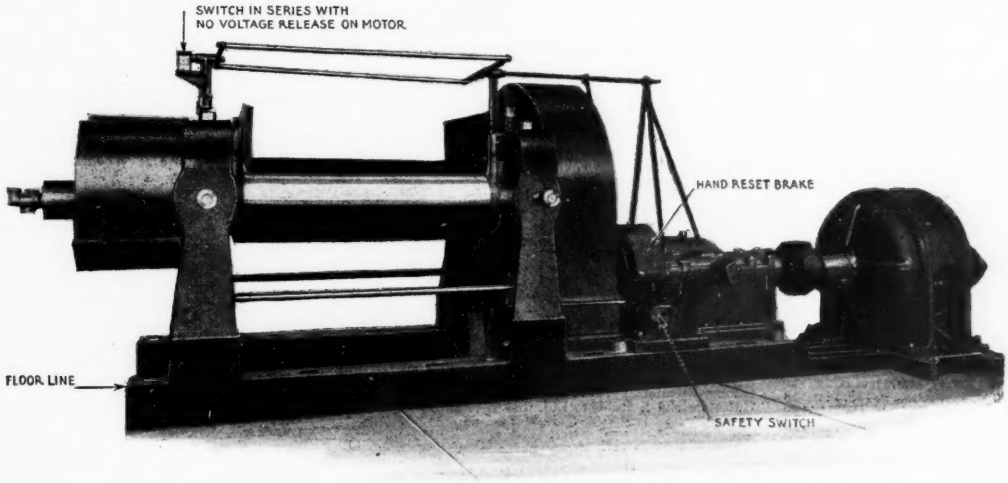

20″ and 22″ x 60″ Individual Motor-Driven Grinder or Mixer with Type R.N. Herringbone Gear Drive.

We are specializing in manufacturing Individual Motor-Driven Mills, Warmers, Crackers, Refiners and Washers. They are made with gigs so parts are interchangeable, and are made in quantities. Heavy frames with Steel Gibs in the top. The bedplate is very heavy and contains Mill Drive and Motor.

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20 & 22x60″ with 125 or 150 H.P. Motor, 720 R.P.M.

WILLIAM R. THROPP SON'S CO.

Trenton **New Jersey, U. S. A.**

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Dependable Mold Service!

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Our equipment is large enough to enable us to give satisfactory service on volume orders. Yet, our organization is not too large to prevent our giving each order the close personal supervision that this work requires.

The manner in which we operate guarantees dependable service and perfect workmanship.

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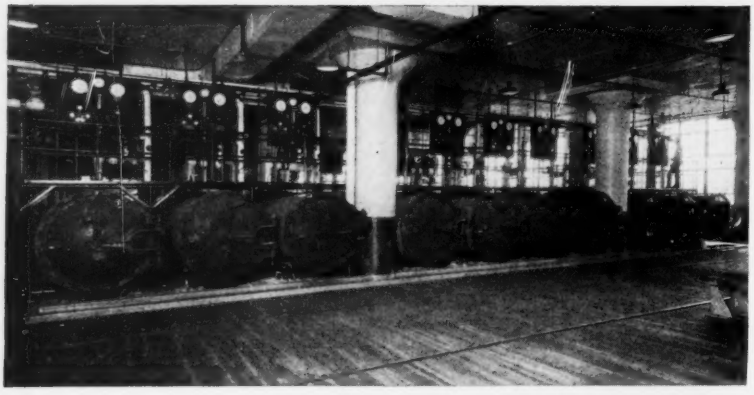
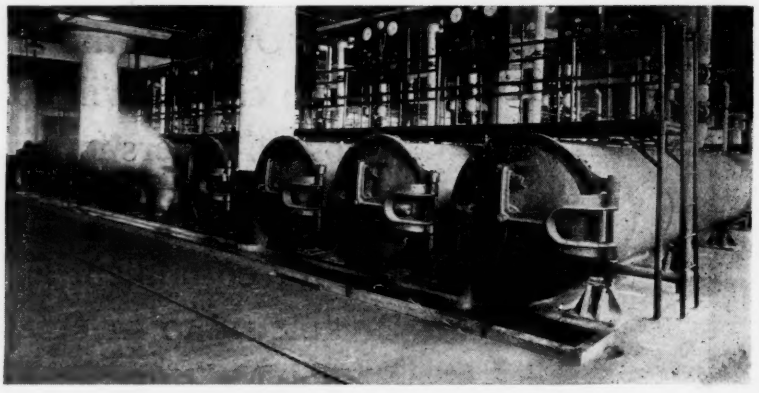


These views show a total of 20 Biggs inner tube vulcanizers equipped with quick opening doors installed in the modern plant of the United States Tire Company, G. & J. Division, Indianapolis, Ind.



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